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This Teacher's Manual is one of a series of instructional aids prepared by the Department of Agricultural Education at the Pennsylvania State University. It includes suggestions and references for the teacher to use with the student manual available as VT 001 637. In addition to the subject matter included in the student manual, pages are inserted at the end of each problem area containing suggestions, references, resource people, audio-visual aids, suggested learning activities, suggested placement experiences, and a quiz. A unit examination is available at the end of the document. (DM)

Interim Report

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LANDSCAPE DESIGN

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A Teacher's Manual

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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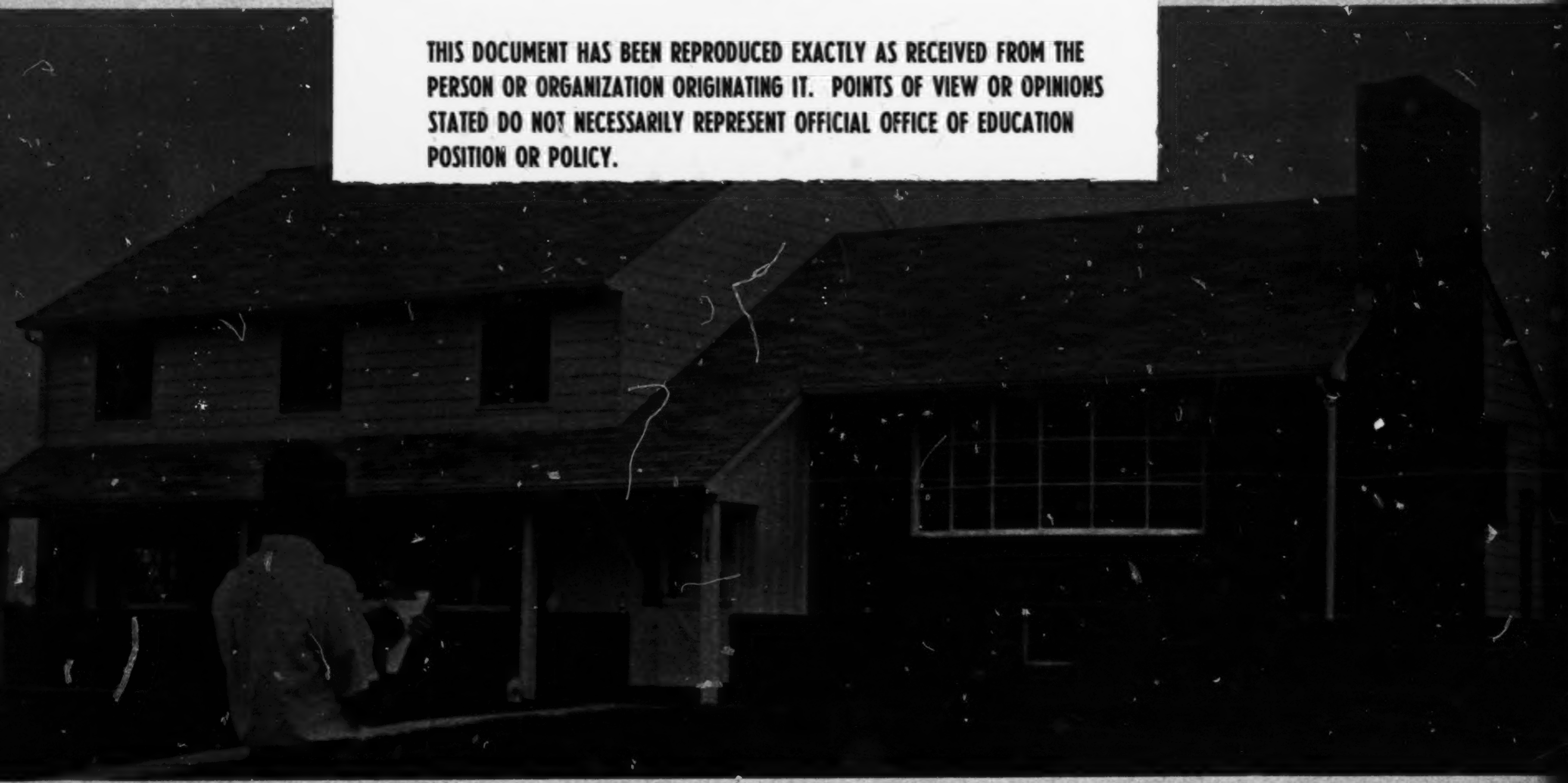

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This publication was prepared and edited by the following staff members of the Department of Agricultural Education, College of Agriculture, The Pennsylvania State University: N. Laurence Miller, Graduate Assistant, William J. Brown, Jr., Instructor, R. Jack Mercer, Instructor, Gene M. Love, Associate Professor, and Richard F. Stinson, Associate Professor.

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Illustrations, photographs, and an accompanying series of color slides were largely the work of Richard W. Tenney, Graduate Assistant, Department of Agricultural Education.

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Introductory Statement

Landscape Design - A Teacher's Manual is one of a series of instructional aids being prepared and edited by the Department of Agricultural Education through a contractual agreement between The Pennsylvania State University and the United States Office of Education, Division of Adult and Vocational Research. In addition to the development of instructional aids, the contract provides for two teachers' institutes in ornamental horticulture. The first was held July 5-22, 1966. The second was held July 3-21, 1967.

Teachers from the northeastern states who participated in the second teachers' institute field-tested, evaluated, and helped improve the organization and the content of the unit of instruction.

A special advisory committee has provided guidance in the selection of areas of emphasis for which several units of instruction in ornamental horticulture have been prepared. The committee has assisted by outlining key problem areas and by suggesting important subject matter information to be included in the content of each unit. In addition to Wayne H. Wilson and James DeTuerk, who have been cited previously, the following persons have served in an advisory capacity for the development of this unit of instruction: Darrell E. Walker, Professor and Head, Robert P. Meahl, Professor, and Craig Oliver, Assistant Professor, Department of Horticulture, The Pennsylvania State University.

Richard F. Stinson, Project Director
David R. McClay, Associate Project Director
Glenn Z. Stevens, Associate Project Director

Note to the Teacher

This Teacher's Manual includes suggestions and references for the teacher incorporated with the student handbook. The suggestions and references for the teacher have been printed on the green pages following each problem area.

In preparing to teach a problem area the teacher may wish to use this manual as follows:

1. Read the student material pertaining to the problem area.
2. Obtain and read the recommended references.
3. Order visual aids.
4. Read the suggested student learning activities and make plans for using those which seem appropriate.
5. Read the key questions to be emphasized shortly before teaching the unit.

TABLE OF CONTENTS

Page

I. Occupational Opportunities in Landscape Design 1

Landscape Architect. 3
Landscape Designer 4
Horticultural Extension Agent. 5
Landscape Nurseryman 6

II. Importance of Landscaping. 7

Landscaping for Use. 8
Landscaping for Beauty 8
Landscaping Increases Property Value 9

III. Analysis of Landscape Requirements 11

Site Analysis. 11
Analysis of Family Needs 20
Area Layout Plan 25

IV. Ideas for Solving Landscape Problems 29

Layout of Landscape Areas. 30
Ideas for Solving Landscape Problems 31
Landscaping the Public Area. 33
Landscaping the Private Area 50
Landscaping the Service Area 58
Placing Plant Materials. 59
Planning 61

V. Structures and Plants. 63

Planning Landscape Structures. 64
Structural Materials 74
The Structural Plan. 79
The Kinds of Plants. 82
The Planting Plan. 91
Selection of Plant Materials 91

VI. Estimating Landscape Cost. 97

References 101

Appendix A - Plant Materials List
Appendix B - Landscape Symbols
Appendix C - Identification and Classification of Plant Materials Commonly Used for Landscape Plantings
Appendix D - Addresses for Agricultural Extension Publications Services

PROBLEM AREA 1

OCCUPATIONAL OPPORTUNITIES IN LANDSCAPE DESIGN

Student Learning Objectives

The major objective of this Problem Area is to explore the occupational opportunities in landscape design. Students should develop a knowledge and understanding about the:

1. Types of occupations in landscape design.
2. Competencies required for successful employment in the various occupations.
3. Types and level of education needed to attain the competencies required for successful performance in an occupation.
4. Future of landscape design.

Key Questions

1. What occupational opportunities exist in landscape design and what competencies are required to enter these occupations?
2. What educational opportunities are available for securing the competencies needed for the various occupations?
3. What opportunities exist for work experience in the various occupations?
4. What is the outlook for the future of landscape design?

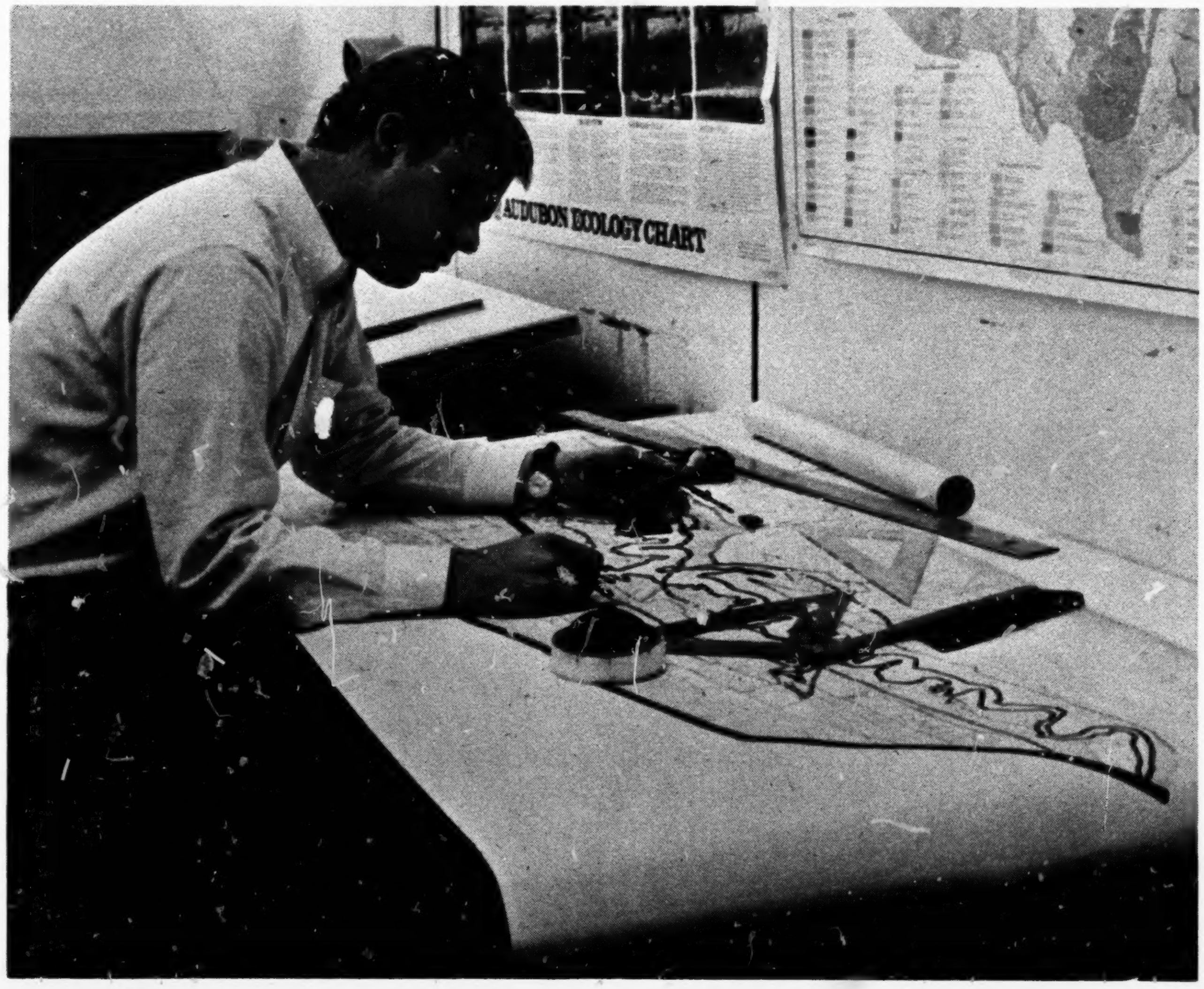
Occupational Opportunities in Landscape Design

Occupational opportunities in landscape design vary with the amount of specialized education and experience possessed by individuals. A very important fact is that many well trained people are needed who can provide landscape design services. Nurseries and landscape designers sell over 300 million dollars of plant materials and services each year. They employ thousands of people to provide these services. By all indications, these phases of agriculture will continue to increase in importance. The occupations in landscape design should appeal to people who enjoy drawing, working outdoors, meeting people, and working with plants.

Before beginning to learn to design landscapes, you must have had some practical experience in maintaining lawns, trees, shrubs, and flowers in a landscape. You must have had similar experience in constructing walks, steps, walls, fences, terraces and other garden structures. You must be able to understand the symbols in a planting plan, and have followed plans in making plantings. You must be able to identify several hundred kinds of trees and shrubs with a glance, and know the purposes for which each can be used.

You are then ready for the material covered in this handbook. Here you will learn architectural drawing, planning, and construction, and gain the experiences needed to be able to devise the best solutions to the problems of making landscapes both useful and pleasant.

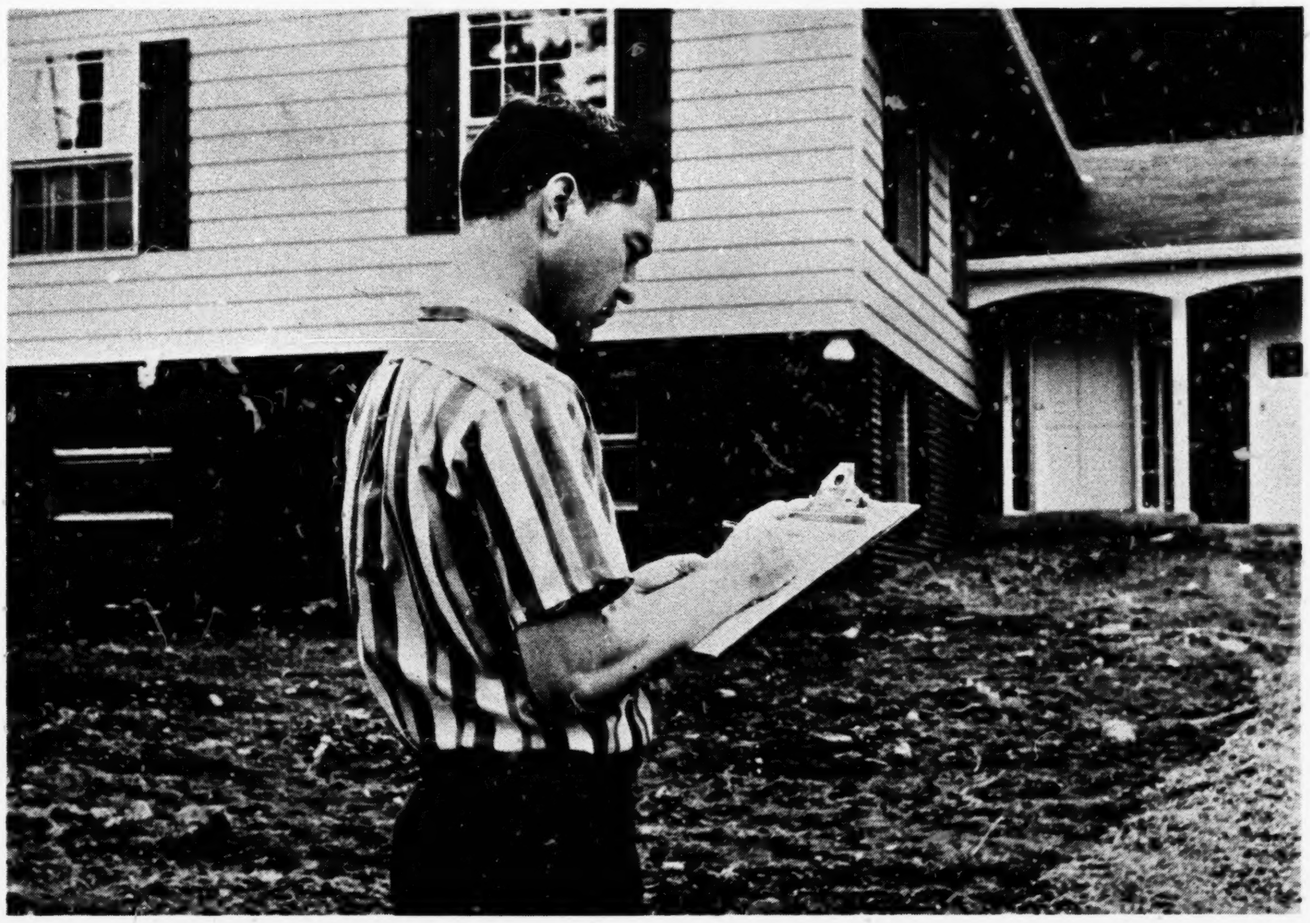
This handbook is aimed at preparing you to be a landscape designer. With additional study in nursery operations and management you would be prepared to enter the area of landscape-nursery work. Additional study at the collegiate level could lead to the positions of a landscape architect, horticultural extension agent, or other professional occupations.



Landscape Architect

The landscape architect is a professional designer and often overseer of large scale land development projects. Typical projects involve land use for industrial parks, large residential subdivisions, parks, schools, highways, and golf courses. Some landscape architects specialize in residential and industrial designing. Development of landscape designs demands an extensive knowledge of plant and structural materials, engineering, art appreciation, and the mechanics of design. A landscape architect may operate his own firm, or may be employed by a large one. Entry into the profession generally comes through completion of a four year college training program and practical experience. Some states require an examination for a state license before one may practice as a landscape architect.

For more information see Careers as Landscape Architect and Landscape Nurseryman, Reference No. 7.



Landscape Designer

The landscape designer is a professional designer who generally specializes in residential and small-scale designs. Development of these designs demands an extensive knowledge of plant and structural materials, engineering, art appreciation, and the mechanics of design. A landscape designer may operate his own firm, or might be employed by a landscape nurseryman or a garden store.

A great need for landscape designers is developing. This is because landscape architects cannot keep up with the demands for their services on residential and other smaller properties. Landscape designers are not required to hold a license to practice in most states.

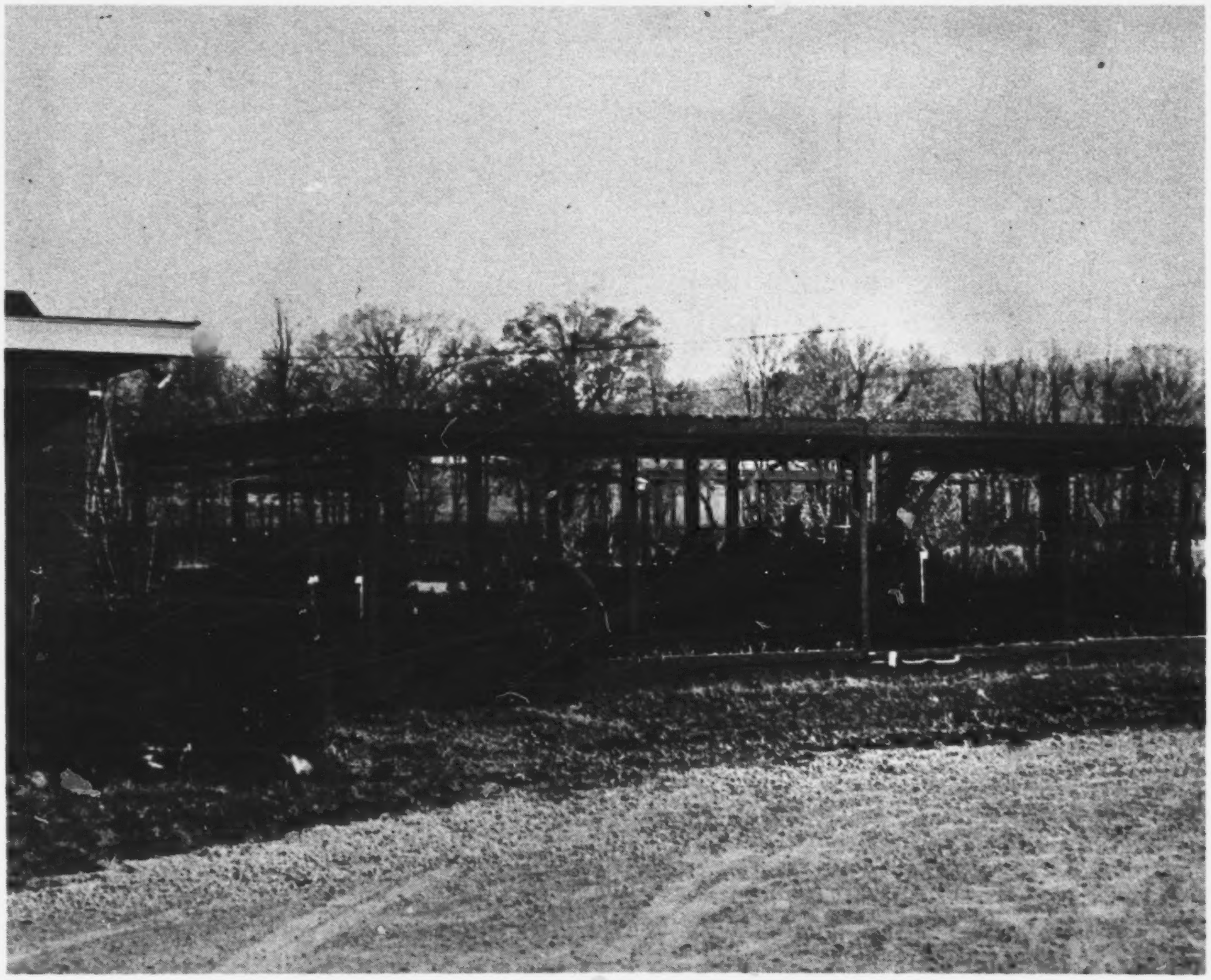
The amount of knowledge required of a good landscape designer is such that two years of study beyond the high school level is necessary for the development of the needed knowledge and skills.

For more information see Careers as Landscape Architect and Landscape Nurseryman, Reference No. 7.

Horticultural Extension Agent

Persons in a position as horticultural extension agent instruct, advise, and inform individuals and organizations regarding horticultural problems. Lecturing, demonstrating recommended practices, preparing extension publications, and problem solving are examples of the types of duties performed. This is a professional field demanding at least a four year college education in horticulture. Experience in nursery and turf industries are extremely helpful.

For further reading see Handbook of Agricultural Occupations. Reference No. 21, pp. 189-212.



Landscape Nurseryman

The landscape nurseryman designs, establishes, and maintains small scale landscaping projects. He may also establish a landscape from plans developed by a landscape architect. Many landscape nurserymen operate nursery or garden centers. The landscape nurseryman must have extensive knowledge of plant materials, their care, and their uses. He needs to understand landscape design, construction, and business principles. Entry into the profession is through technical training and work experience. A college education is desirable, but not essential.

More details are given in Careers as Landscape Architect and Landscape Nurseryman, Reference No. 7, and The Nursery Business, Reference No. 50.

SUGGESTIONS AND REFERENCES FOR THE TEACHER

There are many occupational opportunities in landscape design, establishment, and maintenance. A survey of vocational-technical manpower needs indicated that about 77.4 percent of the job opportunities are for service workers. The median entry wage for the service workers surveyed was $3,765 per year. Higher wages may be expected for employees with technical, supervisory, and managerial competencies. Students should be encouraged to explore the characteristics of different jobs in landscape horticulture and to determine ways of attaining the competencies necessary for entry and advancement in an occupation.

Each student should be able to identify the skills and rewards associated with each occupation. Students should develop an awareness of opportunities for on-the-job training and for technical education. Students planning to enter professional fields should take the courses in high school which are necessary for college entrance.

Learning Resources

References:

Careers as Landscape Architect and Landscape Nurseryman, Reference No. 7.

Handbook of Agricultural Occupations, Chapter X, pp. 189-212, Reference No. 21.

The Nursery Business, Reference No. 50.

Resource People:

Landscape Architect
Landscape Designer
Horticultural Extension Agent (Landscaping)
Landscape Nurseryman

Audio Visual Aids:

"A New Broom Sweeps Green," film, California Association of Nurserymen, Mitau Building, 8th and J Streets, Sacramento, California 95814.

"Landscape Horticulture," slides, University of California, Agricultural Extension Service, University Extension Film Library.

Suggested Learning Activities

1. List the classifications of occupations in ornamental horticulture on the blackboard. Fill in the (1) percentages of occupations in each occupational category and (2) the median salaries at entry and advancement levels. The data for Pennsylvania was secured from Off-Farm Agricultural Occupations in Pennsylvania published by the Department of Agricultural

Education, The Pennsylvania State University. Similar data can be obtained from Agricultural Education Departments in many other states. The following is a suggested blackboard layout for presentation of the information.

Characteristics of Occupations in Ornamental Horticulture

Level of Employment	Percentage of Persons Employed	Median Entry Salary	Median Highest Salary
Professional	1%	$6,666	$9,187
Managerial	13%	$5,523	$8,200
Technical	2%	$3,482	$5,833
Sales	5%	$4,030	$5,031
Clerical	1%	$3,555	$5,999
Services	78%	$3,765	$7,971

With this introduction, have students read about specific occupations listed in Problem Area 1 of the student handbook or from other references which have information about agricultural occupations.

2. Furnish students with catalogs and pamphlets concerning professional and non-professional careers in ornamental horticulture or landscape horticulture. The guidance department is an excellent source of occupational information.
3. Have students develop a series of bulletin board displays depicting various occupations in landscape design and maintenance.
4. Invite a resource person to discuss occupational opportunities in ornamental horticulture. He should be encouraged to discuss the characteristics and competencies needed by an employee. Plan a question and answer session. Prepare questions in advance.
5. Ask each student to visit a business employing people in this activity. Each student should give an oral and written report of what he observed while visiting the business.

Suggested Placement Experiences

1. Ask the employer to discuss occupational opportunities and seasonal activities with students placed in his business.
2. Ask the employer to provide a series of different work experiences for students placed in his business. Working at different types of jobs allows students to become familiar with the competencies needed for entry level jobs.

Test

1. List several ways to secure vocational training in ornamental horticulture.
2. What types of interests indicate that a person may be suited for an occupation in landscape horticulture?
3. Inventory your personal likes and dislikes and determine the types of jobs in landscaping which are most interesting.
4. What differences are there in the kind of work done by a landscape designer and a landscape architect?
5. What kinds of ability are particularly needed by a horticulture extension agent?
6. What does a landscape nurseryman need to know in addition to how to handle plants?

PROBLEM AREA 2

IMPORTANCE OF LANDSCAPING

Student Learning Objectives

The primary objectives of this problem area are to:

1. Develop an understanding of the reasons for landscaping.
2. Develop an appreciation for the economics and aesthetic value of landscaping.

Key Questions

1. Why is it important to landscape a home and/or large-scale land development project?
2. What determines the type of landscaping to be applied to an area of land?
3. What are the benefits received from landscaped property?
4. How does landscaping increase property value?

New Words

Aesthetic values - personal values of persons for the beautiful and the satisfying

Utility - useful, having a purpose

Importance of Landscaping

A site is landscaped to increase its usefulness, beauty, and economic value. Residential property space is usually scarce and existing living areas crowded. Therefore, a landscape plan is needed to make the best use of the available space in providing for the needs of the homeowner. The same reasons extend into park and industrial site planning. They also apply to city and regional land use planning.

For further reading see Landscape Architecture: The Shaping of Man's Environment, Reference No. 27, Sunset - Landscaping for Modern Living, Reference No. 48, pp. 7-16, and Urban Landscape Design, Reference No. 56.

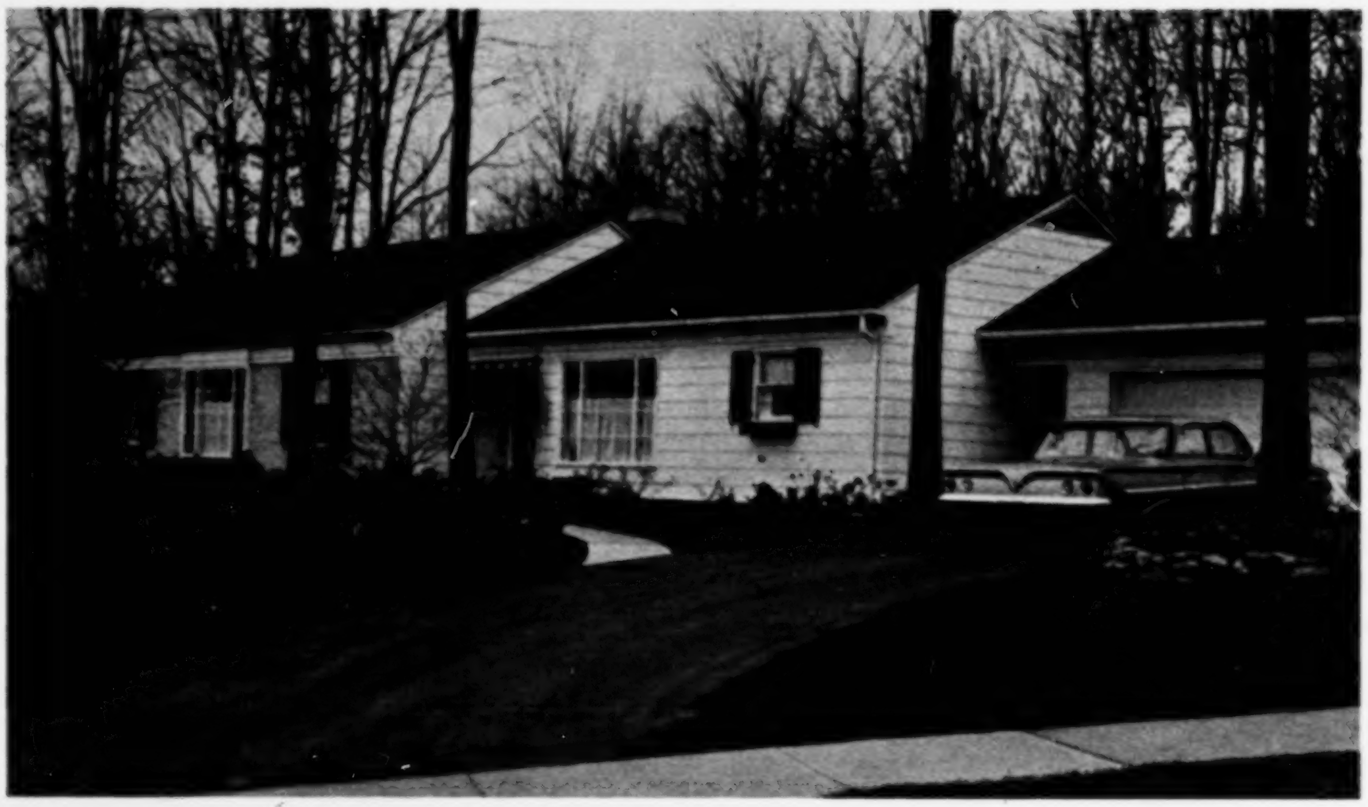


Figure 1. A well-designed landscape is useful and pleasing to the eye.

Landscaping for Use

Proper landscaping should have utility as well as beauty. Walks, drives, patios, and parking areas are necessary in order to carry on the daily routine of the family. Walks and drives should be constructed to provide ready access to the house, garage, and terrace. The walks and drives should be an appropriate size for comfortable use. They should be durable, non-slippery and as attractive as possible. Their placement should make allowances for attractive positioning of plant materials. Likewise, parking areas can be located and shaped so that they are useful and attractively blend into the landscape. They may be shaped to be useful for both parking and outdoor games, such as basketball, and still be aesthetically pleasing.

Landscaping for Beauty

One purpose of a landscape is to provide an attractive environment for the owner, the neighbors, and passing traffic. Streets with well landscaped houses give a good impression. Their beauty reflects the owner's pride in the appearance of his home ground.

An attractively landscaped house is aesthetically pleasing. People see and appreciate the beauty that can be added with plant and structural materials and take pride in their landscaped property. If a neighbor's property is well landscaped, the homeowner can enjoy the view rather than having to screen out unattractive off-site factors.

The public's opinion of an area largely depends upon its landscaping. Neighborhoods with attractively landscaped properties usually have a reputation of being a good section in which to live. Neglected landscapes create a "negative" impression of the neighborhood.

Landscaping Increases Property Value

Good landscaping improves the value of the property in several indirect ways. The house will be more appealing to a prospective buyer because of the usefulness and attractiveness of the landscape features. Buyers also realize the value of having an established landscape rather than having to bear the expense and effort involved in establishing landscape materials around a new house. An attractive landscape in a good section of the city may be the final selling point needed to complete the sale of the house.

An established landscape also can be enjoyed immediately rather than having a delay of several years until a new landscape becomes established. In dollars and cents, an established and well designed landscape adds approximately ten percent to the value of the property. The value increases each year as the plant materials, especially trees, grow toward maturity.

Landscaping will continue to become more important as more people become aware of how well landscaped homes, commercial establishments, and public areas contribute to their convenience, comfort, and feeling of well being.

SUGGESTIONS AND REFERENCES FOR THE TEACHER

The importance of landscaping in improving the usefulness, beauty, and value of property can be appreciated by visits to residential properties with a landscape architect, landscape designer, or landscape nurseryman. A visit with a realtor may also be helpful.

Learning Resources

References:

The Art of Home Landscaping, Chapter I, Reference No. 49.

Landscaping Your Home, Chapter I, Reference No. 35.

Audio Visual Aids:

"A New Broom Sweeps Green," film, California Association of Nurserymen, Mitau Building, 8th and J Streets, Sacramento, California 95814.

Suggested Learning Activities

1. Visit a new home site with a designer and have him point out how the residential grounds may be made useful by adding walks, terraces, fences, and other structures. Ask him to discuss the placement of trees and shrubs for shading and screening.
2. Visit and older home site that has "aging" plant material with a landscape architect and ask him to point out the changes that could be made to improve the usefulness and pleasantness of the site.
3. Visit a 5-year old planting at a residence with the landscape-nurseryman who made the plan and the planting. Ask him to explain the placement and function of each plant, or group of plants, in the landscape.
4. Visit a realtor and ask him to explain the difference between the "fine" neighborhoods and the "ordinary" ones in your town.

Test

1. Give three reasons for landscaping a property.
2. Approximately how much does landscaping increase property values?
3. How can landscaping increase the utility of property?

PROBLEM AREA 3

ANALYSIS OF LANDSCAPE REQUIREMENTS

Student Learning Objectives

Before a landscape can be planned and installed, the landscape designer must be able to think through the landscape requirements. Therefore, the basic objectives of this problem area are to learn how to:

1. Determine the landscape needs of both a site and the family living on the site.
2. Develop the ability to integrate site analysis and family needs.
3. Develop the ability to use the "Site Analysis Check Off List" and the "Analysis of Family Needs Check-Off List."

Key Questions

1. How are the landscaping needs of a site determined?
2. What equipment is needed to analyze landscape requirements?
3. Of what importance is the relationship of on-site factors to off-site factors?

New Words

Compromise - to unite two or more opposing factors (example-different family desires for a landscape design)

Easements - rights-of-way for utilities (sewers, power lines, etc.)

Field Stone - flat stone gathered from a field

Rock Outcropping - rocks exposed above ground level but firmly anchored in the ground

Stabilize - to be made lasting, without movement, permanent

Site Analysis

The term "site" refers to the area being landscaped. One of the more important types of basic information needed before developing a property design is an evaluation of the site. One must actually visit the site to perform the evaluation. The site analysis includes both "on-site" factors (the house and lot area) and "off-site" factors (neighboring properties, distant views, etc.).

For further reading see Budget Landscaping, pp. 120-145, Reference No. 6, Sunset - Landscaping for Modern Living, pp. 17-34, Reference No. 48, The Art of Home Landscaping, pp. 17-76, Reference No. 49.

The "Site Analysis Check-Off List" is a helpful guide for determining the basic information needed for landscape planning. Detailed information is gathered at the property by filling out this form. After each item has been plotted on the plan, it is checked off on the list.

It is easiest to draw the site features on graph paper while one is on the site. See page 19 for instructions on drawing. The following equipment should be taken on the first visit: (1) drawing boards, (2) a T-square, (3) an architectural scale, (4) a directional compass, (5) an art gum eraser, (6) No. 2 or No. 3 pencils, (7) graph paper (1 inch equals 8 feet scale preferred), (8) an 8 inch, 30° - 60° triangle, (9) a 50-foot metal tape, (10) a drawing compass, (11) spring clips, (12) a carpenter's string, (13) stakes, and (14) a string level. A second person will be needed for taking measurements. For taking a soil sample, a spade and a one-pint jar will be needed.

The drawing, the "Site Analysis Plan," is the first in a series, each based on information added to the previous one(s). The series includes: (1) The Site Analysis Plan, (2) The Area Layout Plan, (3) The Structural Plan, (4) Planting Plan, and (5) The Finished Landscape Plan.

On-Site Factors

When conducting an on-site evaluation, detailed information concerning the property should be gathered and plotted on a site analysis plan. The data must be collected in the field in rough form and brought back to the office where it can be carefully plotted to scale on a base plan. Accuracy of the plan may have to be checked by a second visit to the site. If the owner or builder can give you a property plan prior to the first visit to the site, data collection may be simplified. Such a plan must still be redrawn upon return to the office. This on-site evaluation must be exact and detailed. Each of the following must be carefully noted:

Slopes: Be careful to note both the direction and the amount or degree of the slope. The information will be necessary later to

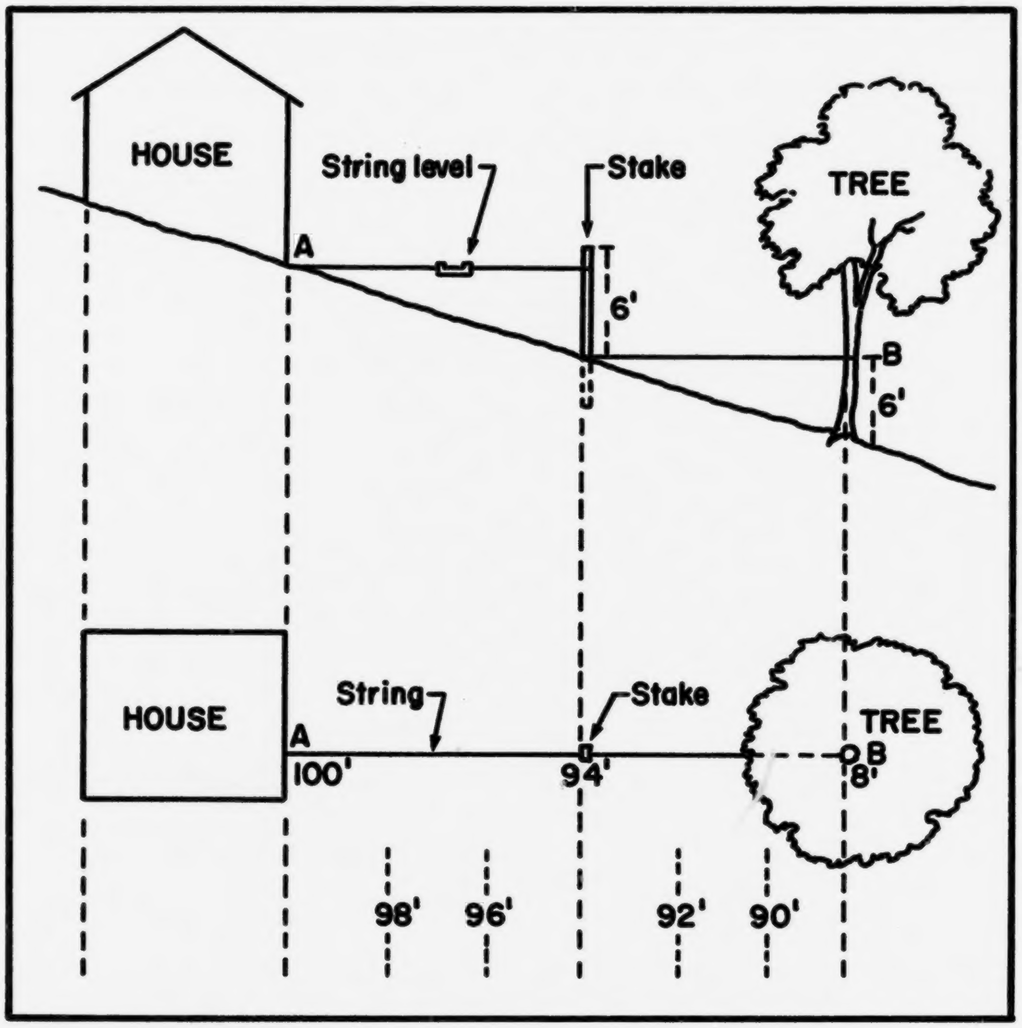


Figure 2. Contour lines may be determined and plotted by using the following steps:

1. Start at one point, A, for example, and call it 100 ft. in elevation. Plot it on your plan.
2. Drive a stake in the ground at any convenient distance down hill, (A').
3. Run a string from A to A'; level the string by means of a string level.
4. Measure the distance along the string from A to A'; mark this point on your plan.
5. Measure the distance from the point where the string is tied to the stake, A', to the base of the stake, B.
6. Subtract this measurement from 100 ft. and you have the elevation of point B, (94 ft.).
7. Knowing the elevation of point B, you can find the elevation of the base of the tree, B', by following the steps given in 1 through 6.
8. By a similar procedure, you can determine a number of elevation points, plot them on the plan, and draw contour lines joining all the points having the same elevation.
9. Contour lines are usually plotted in 2 ft. intervals for residential plans, (often in terms of feet above sea level because this eliminates negative numbers).

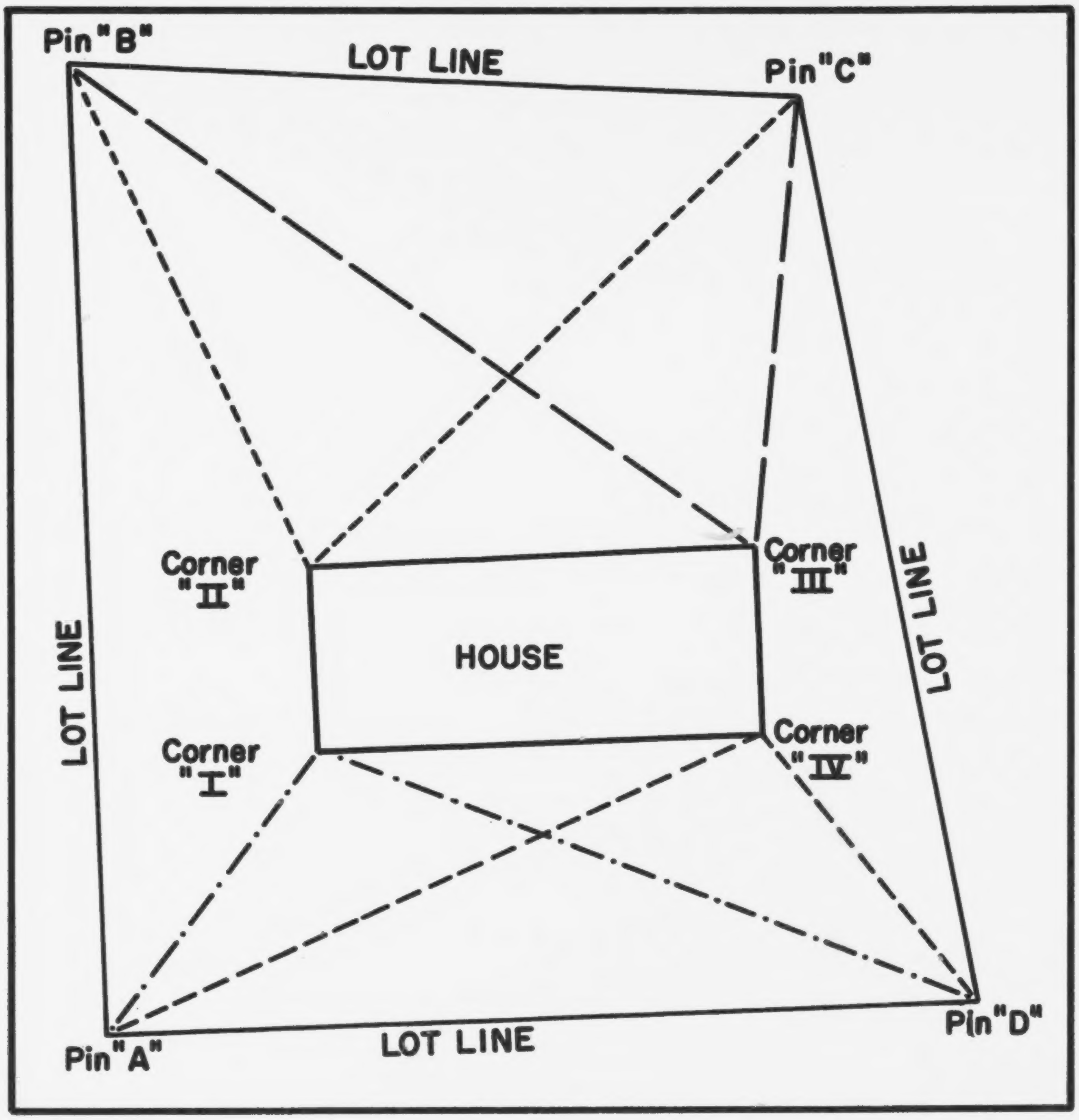

Pin "B"
LOT LINE
Pin "C"
Corner "II"
Corner "III"
HOUSE
LOT LINE
LOT LINE
Corner "I"
Corner "IV"
Pin "A"
LOT LINE
Pin "D"

Figure 3. Plotting the exact location of a house on a lot is most easily done by making careful measurements from two lot corner pins for each corner of the house. For example, the precise location of house corner "I" is determined by measuring the distance from Pin "A" and Pin "D".

develop the lot. Direction and amount of slope contours are most important in determining the drainage pattern. In cases of steep slopes, contour lines will have to be established on the plan. See Budget Landscaping, Reference No. 6, and Landscaping Your Home, Reference No. 36, p. 25. A simple way to determine contours is shown in Figure 2.

Soil: Note the type, depth, fertility, structure, and drainage qualities of the soil on the site. Soil type refers to whether it is a clay, loam, or sandy soil. Each type of soil has a different influence on the development of the site. Take soil samples and have them analyzed. In cases of poorly drained sites, drainage tile lines may be needed.

Rock outcroppings: Some rock outcroppings have charm and beauty which can be blended into a landscape; others simply present difficulties and must be removed. It is important to show on the site plan the type of rock and the size and location of outcroppings.

Water: Every site plan must include information on the location of springs, brooks, marshy terrain, ponds, and other bodies of water if present.

Existing vegetation: The size, shape, age, condition, location and species of existing trees, shrubs, and plant beds must all be included in the site evaluation. Also, the size and condition of grass and bare soil areas should be indicated.

Structures: Structures on the site are evaluated in terms of location, exposure and orientation, type, style, condition, and construction. Examples of structures include walls, drives, walks, patios, homes, and fences. The exposure of structures to prevailing winds and their orientation to the sun will influence the selection of plant material. The method for determining the exact location of the building on the site is shown in Figure No. 3.

Climate of site (micro-climate): Record information about the amounts of sun, wind, and shade for each area of the site. Determine the hardiness zone, winter temperature range, prevailing winds, and average summer rainfall. These factors may restrict later plant material selections.

Utilities: Underground and overhead utilities should be plotted on the site map. The information will enable the designer to avoid planting trees where their branches or roots will interfere with water pipes or electric lines.

Legal Aspects: Plot boundary lines, rights-of-way, and setbacks on the site plan. Notes regarding deed restrictions, easements, and building and zoning regulations must be made. Some city ordinances will not permit obstruction of a view across a corner. Some will not permit planting of certain undesirable trees such as poplars and female boxelders. Some have restrictions on fence dimensions and locations. And others restrict out-building construction.

Off-Site Factors

The analysis of off-site factors means to consider the site in relation to distant views and neighboring areas. Common examples of favorable views include mountains, valleys, bodies of water, forests, towns, and cities (especially at night). Neighboring properties have a distinct influence upon a site's landscape needs. A mature oak tree may be located ten feet outside a portion of the site being landscaped, but visually it becomes part of the landscape picture. If a neighbor has a pleasant-looking backyard, the view of his landscape may be accented. Sometimes control of pedestrian traffic across the property becomes necessary. Noise, dust, and bright lights sometimes present problems. Sometimes it is desirable to screen portions of the view into neighboring properties. Common examples of unfavorable views include utility lines, billboards, roads, schools, factories, junkyards, and unkempt neighboring yards.

Study the following Site Analysis Check-Off List (pp. 17-18) and the Site Analysis Plan (p. 19). You may wish to analyze your own home site using the check-off list. Suggest to your teacher that the class select a newly built home in the community and develop a Site Analysis Plan.

SITE ANALYSIS CHECK-OFF LIST

Location ________________________ Lot No. ____ Date __________

Client Name ________________________ Telephone No. ____________

On Site Factors

Lot:
Dimensions - length __________ width ___________ plotted ____
Rights-of-way ______________________________ plotted ____
Easements ____________ kind __________________ plotted ____
Legal restrictions - setback __________________ plotted ____
lot lines __________________ plotted ____
corner obstruction __________ plotted ____
fence, setback ___ height _____
length _____ type _____
outbuilding _______________
trees not permitted -
boxelder (female) ___ poplar ___
willow ___ other ______________

Sidewalk:
Installed ____________________________ location plotted ____
Not installed ___________________ future location plotted ____
done by owner _____ city _____
Never to be installed _____ Contours plotted ____
Drainage - adequate _____ inadequate _____
install tile lines _________________________ plotted ____
Soil type - clay ___ loam ___ sand ___ muck ___
Soil sample taken _____
Soil test results - pH ___ N ___ P ___ Ca ___ other _____
Rock outcropping ____________________________ plotted ____

Water :
Spring ___ brook ___ pond ___ marsh ___ other ____ plotted ____

Existing vegetation:
Trees ___ species _________ height ____ width ____ plotted ____
_________ ____ ____ ____
_________ ____ ____ ____
_________ ____ ____ ____
Shrubs __ species _________ height ____ width ____ plotted ____
_________ ____ ____ ____
_________ ____ ____ ____
_________ ____ ____ ____
Turf areas _______________________________ plotted ____
satisfactory _____ renovate _____ replace _____
Bare soil ________________________________ plotted ____

Structures: House ________ length _________ width ____________ plotted ______
Front faces north ____ east ____ south ____ west ____
other ___________
Style _______________________________ color(s) _______________
Material - brick ___ frame ___ stone ___ other _______

Outer Buildings - length ________ width __________ plotted ______
Materials ____ plotted ______
Driveway _____ width _____ length ____ material _______
plotted ______
Walks ____ width _____ length _____ material _____ plotted ______
Terraces __ width ____ length _____ material _____ plotted ______

Climate: Hardiness zone ___ on plan ___prevailing wind direction ___
on plan ___
Orientation - north indicated on plan ___ shade areas plotted ___
sunlight control area plotted ___
wind control area plotted ___
snowdrift control area plotted ___

Utilities: Overhead poles plotted ________________________ wires plotted ___
Underground water line _____________________________plotted ___
water valve ____________________________________ plotted ___
electric lines _________________________________ plotted ___
electric meter __________________________________plotted ___
drainage lines _________________________________ plotted ___
septic tank _______ drainage field _____________ plotted ___
dry wells ______________________________________ plotted ___
gas line _______________________________________ plotted ___
gas valve ______________________________________ plotted ___
gas meter ______________________________________ plotted ___

Off Site Factors

Favorable views -

Kind	height	width	season	plotted
____________________	____	____	_____	______
____________________	____	____	_____	______
____________________	____	____	_____	______
____________________	____	____	_____	______

Unfavorable views -

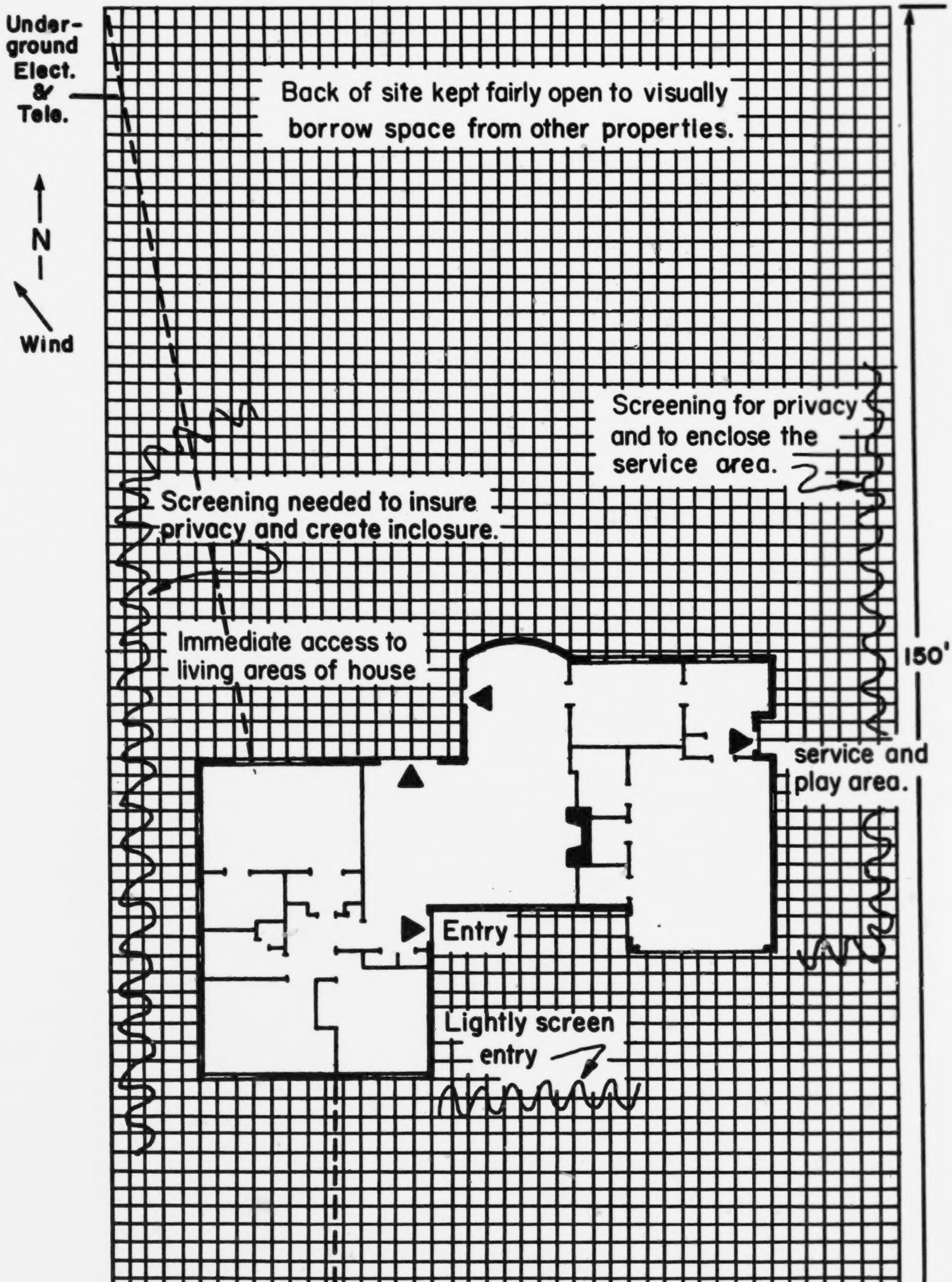
Kind	height	width	season	plotted
____________________	____	____	_____	______
____________________	____	____	_____	______
____________________	____	____	_____	______
____________________	____	____	_____	______

Pedestrian traffic: Control needed _____ not needed _____ pattern plotted ______

Noise: Control needed _________________________ area plotted ______

Dust: Control needed _________________________ area plotted ______

Bright lights: Car ___ parking ___ neighbor ___ other ________
area plotted ______


Underground Elect. & Tele.
Back of site kept fairly open to visually borrow space from other properties.
N
Wind
Screening for privacy and to enclose the service area.
Screening needed to insure privacy and create inclosure.
Immediate access to living areas of house
150'
service and play area.
Entry
Lightly screen entry
Water & Sewage
88'
Plant Hardiness Zone V
Scale: 1/16"=1'

Analysis of Family Needs

An analysis of family needs is an important beginning point for providing information necessary for designing home grounds. Each family has a personality of its own. All members of the family should be asked to list facilities for outdoor activities and outdoor living needs which they desire. To any such list must be added basic plantings and structures necessary to make the site livable. For example, walks, steps, drives, terraces, play areas, and turf to prevent erosion are usually necessary. The need for shade or windbreaks should be considered. Owner preferences for types of materials and plants should be noted.

Family size and ages influence the landscape design. Young parents with large families will want facilities designed for the play of small children. In this situation, an area might need to be set aside for swings, a sandbox, a slide, etc. Areas such as these which are somewhat "temporary" should be designed to allow for different uses in the future. Planning for hobbies and sports must be considered. Some common facilities which can be included in the landscape plan are badminton courts, croquet courts, flower and vegetable plots, and possibly a pool for swimming. Families who enjoy the outdoors would require hard surfaced areas such as a terrace or a patio. Outdoor sculpture, planters, or benches might be a part of the terrace. People wishing to entertain, eat, or simply relax outdoors may desire screening and/or plantings to provide privacy. An active family that does not wish to spend time maintaining its residence will demand landscape planning which reduces maintenance to a minimum. When several family members want conflicting facilities included in the landscape plan, it is necessary to compromise.

Most homeowners want landscape features that are not only useful, but also beautiful and pleasing to the eye. An example, in many situations a field-stone wall has aesthetic values which are preferred to those of one made from concrete block.

While economics may establish absolute cost limits for landscaping costs, the capable designer usually can design an attractive landscape which will satisfy family needs at a modest cost. One way to estimate an appropriate cost is to work within a figure of ten percent of the value of the house and land. Many homes are beautifully landscaped for much less. Economic limitations of the family will often limit the landscaping plans. Execution of the landscape plan is sometimes done in stages over a three to four year period in order to spread the cost over a longer period of time.

Study the following Analysis of Family Needs Check-Off List. Suggest to your teacher that the class complete this form, preferably using the same home for which the Site Analysis Plan was prepared. Study Figure 2 to develop skill in drawing items in the Site Analysis Plan.

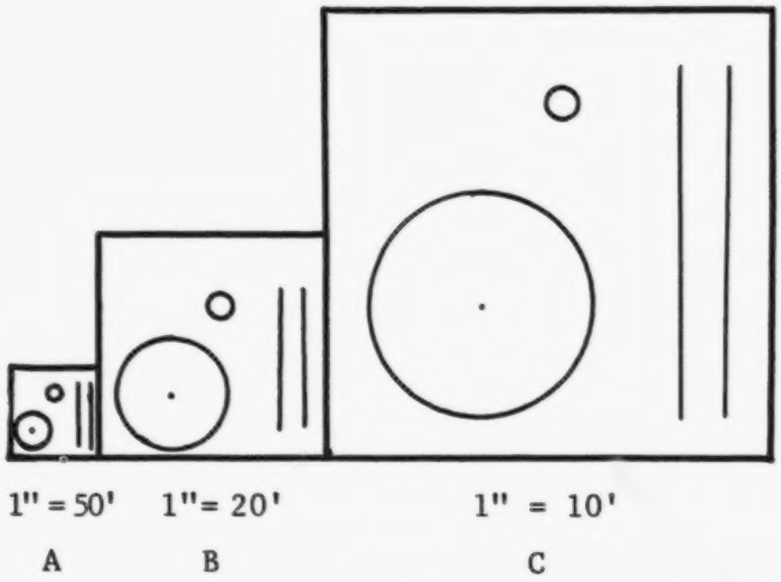


Figure 4. Scale. If you measure the diameter of the large circle (representing a small tree) in each sketch, and compare it with the scale indicated for that sketch, you will find that the tree is the same size in sketches "A," "B," and "C".

All objects represented in a drawing are assumed to be drawn to the scale indicated on the drawing, unless it is labeled "not to scale."

ANALYSIS OF FAMILY NEEDS CHECK-OFF LIST

Location ____________________ Lot No. ____ Date ____________

Client Name ____________________ Telephone No. ____________

Number of Children - Pre-school ______ Elementary ______ High School ________

Activities Needs

Entertaining: Paved area - capacity (people) ______ size ______
color ________ material ______________ plotted ____
Shade - canopy ______ trellis ______
umbrella ______ tree ______________ plotted ____
Seating - benches ______ capacity ______
no. ______ style ______________ plotted ____
chairs ____ no. _____ style ___________ plotted ____
chairs - folding _____ no. _____ style _____
storage __________
tables ______ no. ______ style ________ plotted ____
table - dining ____ capacity ____ style ____
plotted ____
Garden lighting ___ kind ____ style _____ no. _____ plotted ____
____ _____ _____ ____
____ _____ _____ ____

Cooking: Grill - permanent ____ size ____ style __________ plotted ____
portable ___ size ____ style ______ storage plotted ____
Table - work ___ dimensions _____ style __________ plotted ____
Storage for cooking _____ dimensions ____________ plotted ____
Electrical outlets _______ no. ______________ plotted ____

Games: Croquet _____ dimensions 30' x 60' plotted ____
Badminton _____ dimensions 24' x 54' plotted ____
Bowling on the green _____ dimensions 10' x 50' or 20' x 100' plotted ____
Volleyball _____ dimensions 40' x 70' plotted ____
Basketball hoop _____ dimensions 40' x 40' plotted ____
Tetherball _____ dimensions 20' dia. circle plotted ____
Horseshoes _____ dimensions 20' x 40' plotted ____
Archery _____ dimensions 20' x 100' min. plotted ____
Putting green _____ dimensions 30' dia. circle min. plotted ____
Shuffleboard _____ dimensions 6' x 45' plotted ____
Other _________ dimensions ______________ plotted ____
Game storage _____ length _____ width _____ height _____
plotted ____

Playing: Sandbox _____ dimensions ______________ plotted ____
Swings _____ dimensions ______________ plotted ____
Slide _____ dimensions ______________ plotted ____
Playhouse _____ dimensions ______________ plotted ____
Monkeybars _____ dimensions ______________ plotted ____
Wading pool _____ dimensions ______________ plotted ____
Blackboard _____ dimensions ______________ plotted ____
Other (specify) __________ dimensions __________ plotted ____
Storage, wheel toys, etc. _____ dimensions ________ plotted ____

Activities Needs

Swimming:
Pool _____ dimensions ____________ shape __________
material ____________________________________ plotted _____
Diving board _____ dimensions ____________________ plotted _____
Paved area _____ dimensions ______________________
material ____________________________________ plotted _____
Enclosure ____ plotted _____
Equipment storage __________________________________ plotted _____

Gardening:
Minimum maintenance _____________
Automatic watering system ________________________ plotted _____
Flower beds _____ annuals _____ perennials _____
roses _____ mixed ____________________________ plotted _____
Planter boxes _______________ kind _______________ plotted _____
Water garden _____ water lilies ____ fountain _____
dimensions __________________________________ plotted _____
Cutting garden _____ dimensions ___________________ plotted _____
Vegetable garden _____ dimensions _________________ plotted _____
Harb garden _____ dimensions ______________________ plotted _____
Dwarf fruit trees ___ kind ______________ no. _____ plotted _____
______________ _____ _____
______________ _____ _____
Bush fruits _________ kind ______________ no. _____ plotted _____
______________ _____ _____
______________ _____ _____
Vine fruits _________ kind ______________ no. _____ plotted _____
Favorite plants _____ kind _________________________
____
____
____
Ornaments ____ statuary ___ other _________________ plotted _____
Coldframes ____ dimensions ________________________ plotted _____
Greenhouse ____ dimensions ________________________ plotted _____
Compost bin ____ dimensions _______________________ plotted _____
Garden storage: equipment - mower ____ sweeper ___
fertilizer spreader ____
hose ____ sprinkler ____
duster ____ sprayer ____
other ________________________ plotted _____
tools - spade ____ rake ____
hoe ____ hand tools ____
other ________________________ plotted _____
supplies - fertilizer ____ pest
control ____ other __________ plotted _____

Bird watching:
Bird feeder ____ plotted _____
Bird bath ____ plotted _____
Bird houses ____ plotted _____
Bird attracting shrubs _____________________________ plotted _____

Pets:
Doghouse _____ dimensions __________________________
run dimensions _____________________________ plotted _____
Other _____ dimensions _____________________________
run dimensions _____________________________ plotted _____

Activities **Needs**

Laundry: Lines - permanent ______ linear ft. ______ plotted ______
temporary ______ linear ft. ______ plotted ______

Storage: Trash ______ no. containers ______ sq.ft. required ______
plotted ______
Trailers ______ dimensions required ______ plotted ______
Boat ______ dimensions required ______ plotted ______
Other - specify ______ sq.ft. required ______
plotted ______

COST

Approximate landscaping allowance (based on about 10% of the market value of the house and land): $ ______.

Cost limitation set by client: from $ ______ to $ ______.

Execution period:

Years Approximate cost per year
1 ______ ______
2 ______ ______ ______
3 ______ ______ ______ ______
4 ______ ______ ______ ______ ______

Area Layout Plan

By working simultaneously with the site analysis and the analysis of the family needs, the landscape designer can combine all the ingredients to give a useful and pleasing plan. Ingenuity is sometimes needed to solve some of the problems. Compromise solutions may be necessary.

At this point an Area Layout Plan is usually developed (see p. 27). A sheet of tracing paper is fastened firmly in place over the Site Analysis Plan, and the designer does some "doodling" on the tracing paper by drawing on it a large circle indicating the approach (public) area of the property. This is usually at the front of the house toward the street, but is sometimes at the side of the house. Its primary function is to provide easy and pleasant access to the house.

Next, the designer sketches in an area to be designated as the Service Area. This is the area where the trash containers are kept. It may include an outdoor work area, a clothes drying yard, or a dog run. It is desirable to screen these functions and activities from view.

The third area is the private area. It is usually at the rear of the house, but may be at the side, or, in unusual cases, at the front of the house. This area usually requires some screening to provide privacy, but may also require lawn areas for games, paved areas for entertaining, and garden areas for flowers and vegetables.

After designating the three areas, the approach area, the service area, and the private area, you should roughly sketch in some ideas to show how the parts of them may be organized. Indicate where the driveway will be. Show also the location of the walk that will lead from the street or driveway to the door of the house. You might want to sketch in the location of the clothes lines in the service area. You may wish to put in dotted lines to indicate a lawn space for badminton, or sketch in a tentative position for a paved terrace.

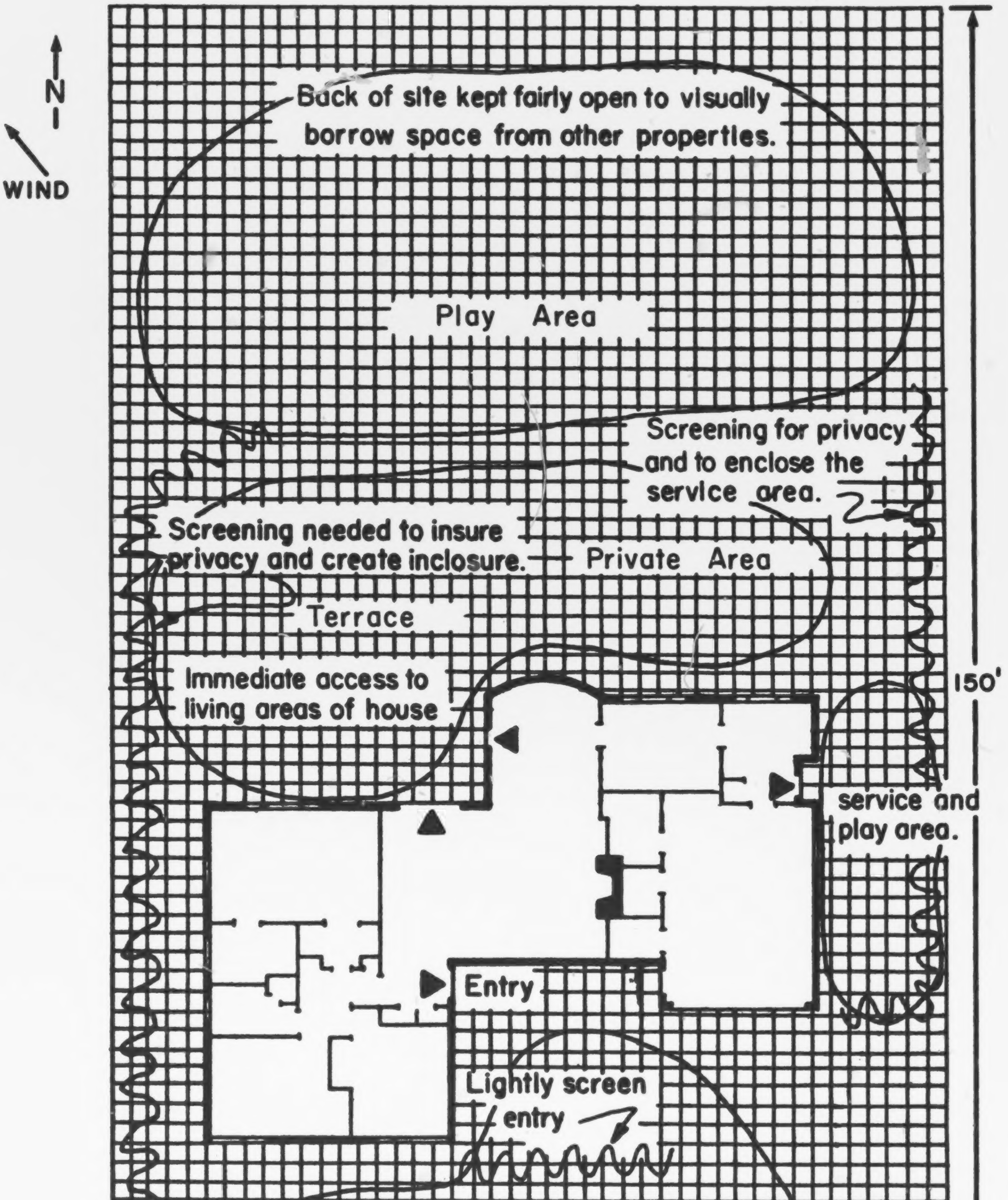
First consideration should be given to size, shape, and placement of structures designed to make the site livable (walks, etc.). Occasionally, features such as drives can serve a dual purpose as sport or entertainment areas. Using off-street parking for a basketball court is an example.

Space for sport and recreation facilities must be well selected and planned. Remember that the space needed for playing badminton or gardening is more readily satisfied on the small lot than the space needed for playing baseball. When possible, combine land uses. For example, the area needed for the lawn and the area needed for badminton might be combined. (See A Guide to Home Landscaping, pp. 201-226, Reference No. 1).

Legal restrictions usually play a minor role in compromising family desires with the landscaping limitations of small landscapes. The most common legal restrictions designate: (1) what types of trees cannot be planted along utility lines, (2) the height of fences and walls between abutting properties, (3) drainage regulations, and (4) deed restrictions. Legal restrictions usually benefit the whole community and do not handicap the designer.

Study the Area Layout Plan on page 27. Follow up the Site Analysis Plan by developing an Area Layout Plan. Preferably, this should be for the same residence used in the development of the Site Analysis Plan.

Area Layout Plan


N
WIND
Back of site kept fairly open to visually borrow space from other properties.
Play Area
Screening for privacy and to enclose the service area.
Screening needed to insure privacy and create inclosure.
Private Area
Terrace
Immediate access to living areas of house
150'
service and play area.
Entry
Lightly screen entry
Public Area
88'
Plant Hardiness Zone V
Scale: 1/16"=1'

SUGGESTIONS AND REFERENCES FOR THE TEACHER

This unit has been developed primarily to lead the student through the steps of understanding what he has to work with (the site analysis), and what is needed and desirable (the family needs analysis), toward the goal of combining these things into a workable and pleasing plan. We have deliberately soft-pedaled the aesthetic aspects which we will take up later.

Learning Resources

References:

Course 131. Landscape Planning for Small Properties. Reference No. 8.

Landscaping Your Home. Reference No. 35.

The Art of Home Landscaping. Reference No. 49.

Equipment and Supplies:

50 ft. metal tape (about 4 per class)
Clipboards (1 per student)
Drawing board, 1/8" tempered masonite (1 per student)
T-square (1 per student)
No. 2H pencils
No. 3B pencils
Red pencils
Graph paper, 8 lines per inch, 1" lines darker
Tracing paper, less expensive by the roll than sheets
12" rule, with a strong edge
Directional compass (1 or 2 per class)
Drawing compass (1 per student)
Spring clips, for holding papers to boards, 4 per board
Carpenter's string
Stakes
String level (about 4 per class)
8" triangle, 30°- 60°

Audio Visual Aids:

"Basic Techniques for Home Landscaping," Film Bookings, Motion Picture Service, U.S.D.A., Washington, D. C. 20205. (11½ min., 16mm.).

"New Guidelines for the Well Landscaped Home," Film Bookings, Motion Picture Service, U.S.D.A., Washington, D. C. 20205.

"Landscape for Living," American Association of Nurserymen, 835 Southern Building, Washington, D. C. 20205.

"Landscaping for the Future," Film, New York State College of Agriculture, Cornell University, Ithaca, New York 14850. ($2.50).

"Plan Before You Plant," Film, California Agricultural Extension Service, University of California, Berkeley, California 94720.

Suggested Learning Activities

1. Begin teaching landscape design by having each student prepare a Site Analysis Plan and an Analysis of Family Needs Check-Off List for a residence near the school. This same site can be used all through the developmental steps in making the landscape plan.
2. Student should practice using the Site Analysis Plan and the Analysis of Family Needs Check-Off List to develop the Area Layout Plan.
3. At this point students should become adept at drawing. If they are lacking in this skill, schedule several class sessions with a drawing instructor who is familiar with the symbols used in landscape plans.

Suggested Placement Experiences

Ask a landscape contractor to give students who are placed with him for work experience an opportunity to:

A. Make site analyses.
B. Determine family needs.
C. Become familiar with drawing equipment.

Test

1. How does attractive landscaping increase property value?
2. Give five examples of on-site factors; five off-site factors.
3. What things should be considered in screening the private area?
4. List five things which should be considered when determining family needs relevant to landscaping.
5. List three things to be considered when laying out the public area; the private area; the service area.

PROBLEM AREA 4

IDEAS FOR SOLVING LANDSCAPE PROBLEMS

Student Learning Objectives

The primary objectives of this problem area are to:

1. Understand the functions of the three parts of a landscape - the public area, the private area, and the service area.
2. Develop the ability to lay out the three landscape areas in accordance with the integrated family needs and Site Analysis Check-Off Lists.
3. Develop an understanding and a working knowledge of a variety of solutions to landscape problems.

Key Questions

1. What are the three major areas of a landscape? What are their separate purposes? How can they be combined?
2. What are the important considerations a landscape designer needs to be aware of when designing the public area? The private area? The service area?
3. How can a landscape designer keep up to date with new ideas for landscape designs?

New Words

Accented - made to stand out

Adjoining - next to, connecting, bordering

Balance - appearing to be stable because of equally distributed "weight"

Canopy - covering, plant cover, overhead structure that shades and shelters the material below

Complimented (complementary) - making complete

Components - the single parts of a whole item

Contrasted - opposite to or different from

Design - a plan

Dominant - ruling or controlling influence

Embellishment - that which adds beauty or elegance

Focus - to attract attention to an object
Harmonious - having parts that blend together
Incinerator - furnace for burning trash
Objectional - not suitable, undesirable
Proportion - size relationship of one object to another or the whole
Restricted - to be limited or confined
Rhythm - a feeling of free-flowing
Scale - size relationships
Specimen - a single plant
Subordinate - not as important as another item
Technique - method or procedure of performing a function or duty
Underplantings - plants growing or planted under a taller plant canopy
Unity - put together in such a way that the parts obviously belong to a whole

Layout of the Landscape Areas

As we indicated in the last unit the site to be landscaped is usually divided into three sections: the public area, the private area, and the service area. Each area is landscaped for different purposes; however, all three must be designed to blend together well.

In the home landscape, the public area is what is seen by people as they pass by the house or approach it. In general, this area includes the land located between the house and the street. Corner lots have larger public areas than others. The driveway, front walk and plantings, some side plantings, and a lawn area usually make up the areas to be landscaped in the public area. In some locations the public area may be very small. These public area components are designed to give the house an attractive setting on the lot.

On a home site the private area is often located behind the house and screened from public view. A private area is an extension of the living and relaxation areas of the house; therefore, it is often located near the dining room, living room, or family room of the house.

This area is used mainly by the family for games, outdoor hobbies, parties, and relaxation. The design of the private area should consider the family's needs for sports, hobbies, and outdoor fun. The plan must also consider the amount of family time and money available for maintenance of the area. The maintenance of a complicated landscape can become a burden rather than a pleasure.

The service area is a work area; it is developed primarily for its utility. Some common things included in the service area are:

Clotheslines
Trash and garbage cans
Incinerators
Equipment storage shed
Play areas
Vegetable and flower gardens
Cold frames
Compost bin

The needs of an owner will determine the size and degree to which the service area must be developed. His desires should be discussed before locating and developing the service area. The service area is best located where it is easy to get to from the house - especially the kitchen, utility room, and garage. Play areas for children should be easily seen from the kitchen. Large service areas may be divided. Place commonly used items, such as trash cans, near the kitchen and less often used items, such as vegetable and flower gardens, further away.

You may wish to do some further reading about these three areas of the residential landscape in Budget Landscaping, Reference No. 6, pp. 9-14.

Ideas for Solving Landscaping Problems

Before developing the landscape plan further, it would be a good idea to learn more about landscaping ideas. The more ideas you can get, the better equipped you will be to make a satisfactory landscape plan.

How does one emphasize the front entry? How can one "lead" people easily from one area to another? How can one "play down" a service door next to the front entry? What should be done with a main entrance that is at the side of the house instead of at the front?

How can one make a small area appear larger? How does one make a tall house seem lower; a low one taller; a long one shorter?

How many ways are there to screen an objectionable view; enhance a pleasant view? Where would one use a partial screen?

How can you "control" pedestrian traffic; keep people from driving off the driveway?

How can you block noise; filter out dust?

What are some alternative solutions for getting people easily up a steep slope? How can you make a steep slope appear lower? How does one control erosion on a steep slope?

What shapes have been used for paved terraces? What materials may be used? How does one get "instant shade" for a terrace? What are some practical kinds of outdoor furniture?

How much space is needed for hanging laundry outdoors? What temporary devices can be used for hanging laundry? How can you hide a vegetable garden; a compost bin; a dog yard?

Answers to many of these questions can be found in your own or nearby residential areas. Look over your neighbors' properties and see what ideas they have used. Additional ideas can be obtained from garden magazines. The "Sunset" booklet series and other books may be helpful. Study the sections of this book on landscaping the public, private, and service areas. Explore the section on selection of landscape structures.

Professional landscape architects and designers make a life-long study of solutions to landscape problems. Many accumulate extensive clipping files and photograph files for ideas to help them in their work. You may wish to start such a collection.

When you find yourself making a "critique" of every home you pass as you walk down the street, you are ready to assemble ideas into a "Structural Plan" and "Alternative Structural Plan" for the home grounds. These can be added to the "Site Analysis Plan" and the "Area Layout Plan" which you have already developed.

The following references give many ideas for solving landscape problems:

Sunset - Landscaping for Modern Living, Reference No. 48, pp. 35-58, 161-164.

Sunset - Garden Plans, Reference No. 48.

Sunset - How to Improve Your Home by Landscaping, Reference No. 25.

The Art of Home Landscaping, Reference No. 49, pp. 77-112, 143-184.

Gardens Are for People, Reference No. 18.

Landscaping Your Home, Reference No. 35

Landscape Planning, Reference No. 30.

Budget Landscaping, Reference No. 6, pp. 15-107.

Landscaping the Public Area

Start to develop some ideas for landscaping the public area by viewing it from the street, from the driveway, and from the walk leading to the main entrance. Good references are Sunset - Landscaping for Modern Living, Reference No. 48, pp. 75-84, and Sunset - Ideas for Entries and Front Gardens, Reference No. 48.

Planning Walks and Drives

Walks and driveways must be located to provide means for easy entrance and exit from properties. Wide use of the automobile has influenced the placement of walks. People often enter a property through the driveway. For this reason, many walks are placed to lead to the main entrance from the driveway. This design feature avoids splitting of the public area into small sections. Sometimes, when the house is near the street or when the parking area is behind the house, it is easier and more attractive to have the front walk lead directly from the street. All walks and steps should be at or near ground level. They should not be more than one inch above the ground. A walk should be at least four feet wide so two people may use it at the same time; six feet would be better. A drive should be at least 12 feet wide to allow passengers to alight on paving. Walks and drives should be straight unless there is an obvious physical reason for making them otherwise. It is difficult to drive on tightly curved driveways because the driver cannot see well enough to avoid accidentally driving on the lawn.

Establishing a Focal Point

Next, study the house and any plant material present in the public area. Picture what must be done to lead the viewer's eye to the most important feature - the front entry. A formula for doing this is to make a sketch to scale of the front of the house or place a sheet of tracing paper over a photograph and make a sketch. Then make three points: one at the bottom center of the door, one at a point about 2/3 of the distance up the left corner of the house, and one 2/3 of the distance up the right corner of the house. Sketch in two dotted lines that join the dots on the corners with the dot at the door. Plantings that do not extend above these lines will give a "V" pattern which directs the eye toward the door. This emphasis upon one object is called "focus". Figure 11 illustrates how this may be done. If the foundation wall is low, the lawn may extend to it for about 1/3 of the wall space.

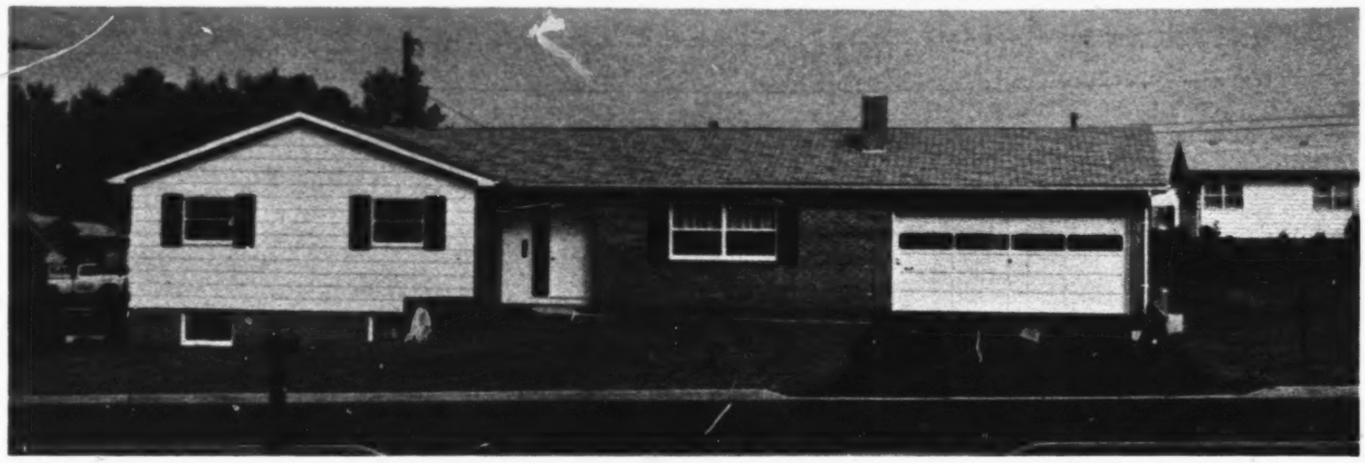


Figure 5. A beautiful house needs complementary landscaping. This is the "site analysis" stage.

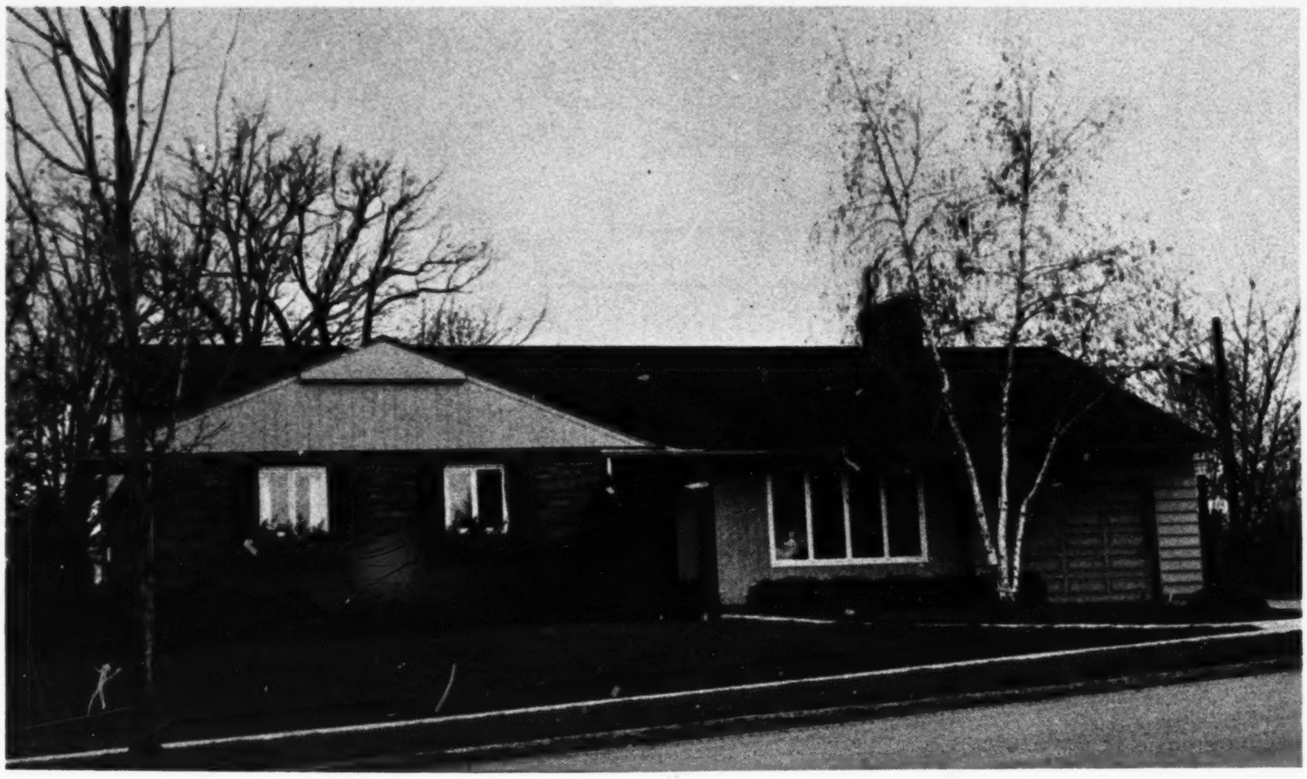


Figure 6. Trees unify the planting.

Grouping Trees and Shrubs

Trees establish a size relationship (or "scale") between the house and other parts of the landscape, (See Figure 10). Houses with dominant horizontal lines may be contrasted by the vertical lines of tree trunks. A tall house with vertical lines may be "tied" to the ground with large trees of rounded form. Often a canopy of tree branches over the house will help soften the lines of the house. Trees may provide a "frame" for the house. (See Figure 7). This may be done by planting them between the house and the sidewalk at an angle off each front corner of the house. Trees planted at the rear of the house form a background and unify the planting scheme. You should at the same time keep in mind that trees should be planted about 20 feet southwest of an area where shade is needed, such as a terrace or southfacing windows. (See Figure 8).

Care must be taken to select trees which will mature at a height in scale with the house. Small to medium height trees should be used with one-story houses. Trees which mature at low heights can be used to screen views in front of the house. On some occasions these low maturing

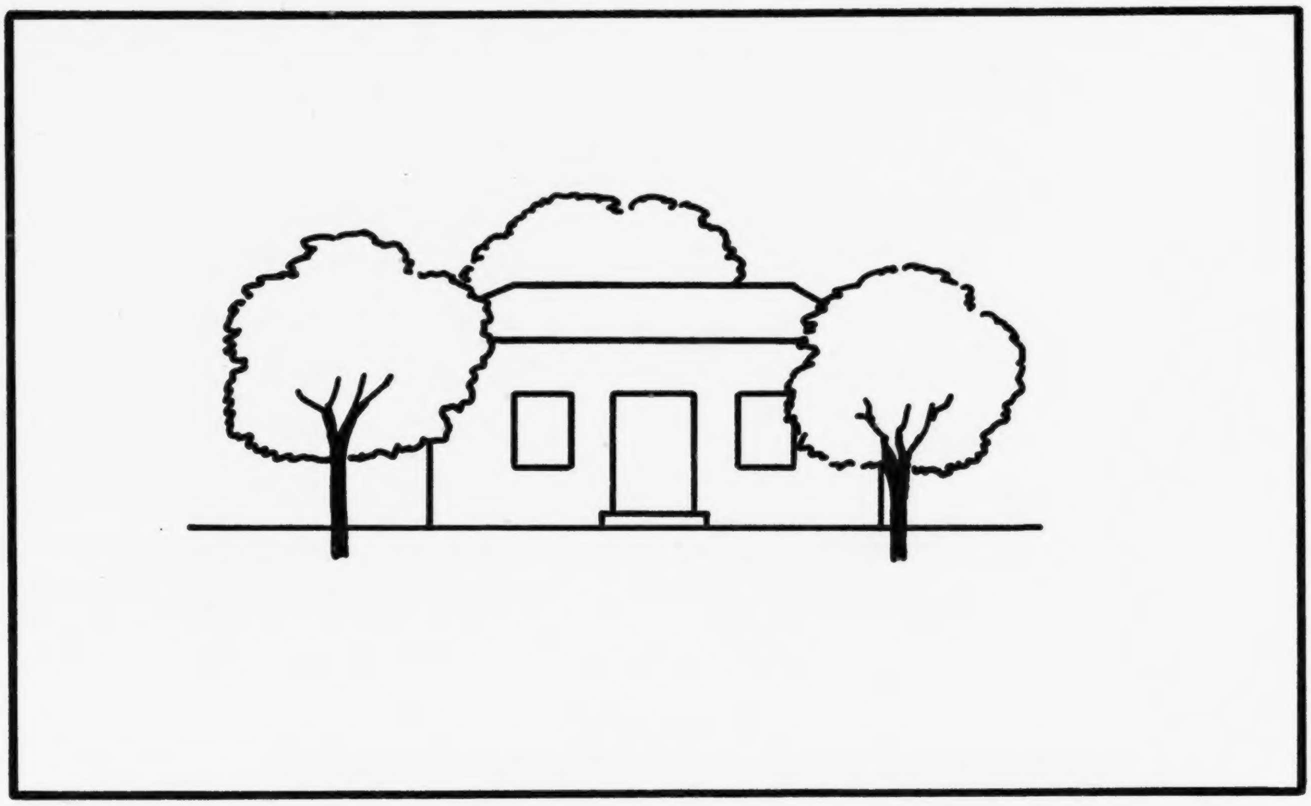


Figure 7. Trees may be used for background and enframement.

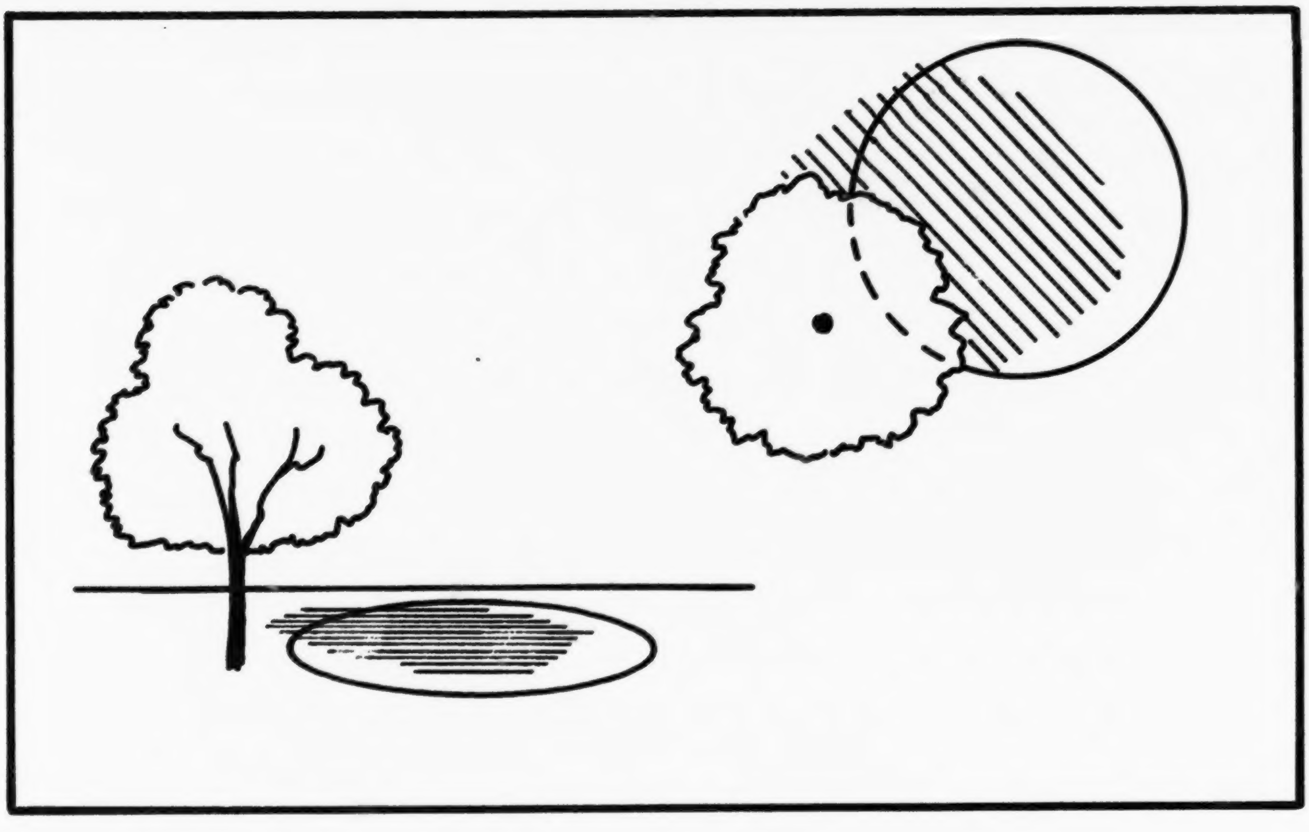


Figure 8. Trees provide shade on a terrace.

trees or similar height shrubs may be positioned to prevent people who pass by the public area from looking directly into the picture window. Place the plants in the line of sight, but at some distance from the window. This is one means for giving privacy to owners of a house with a picture window facing the street. Standard trees should be spaced no closer than 40 to 60 feet apart, while smaller growing species are planted 10 to 20 feet apart. (See Figure 10.)

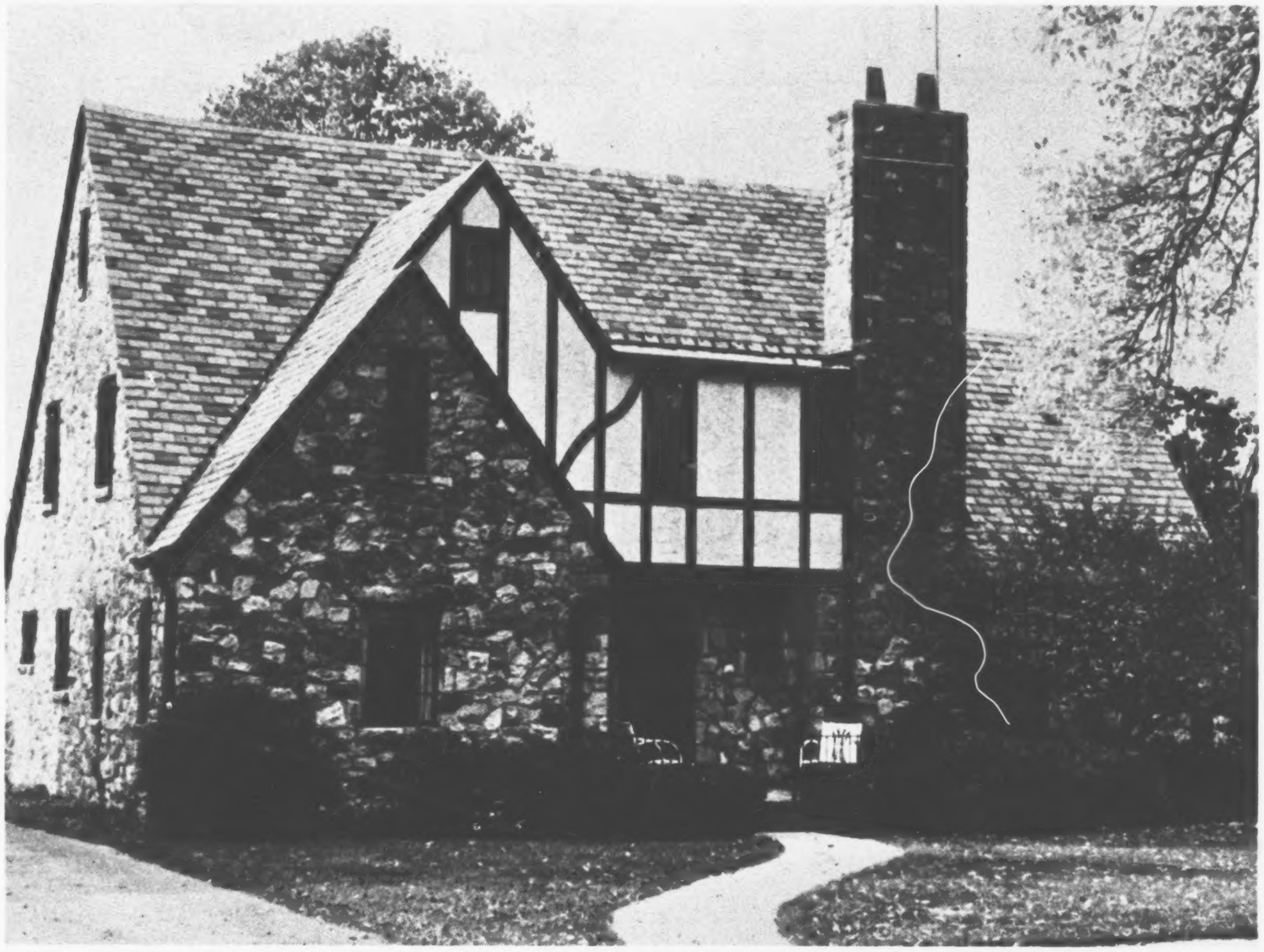


Figure 9. Shrubs form a low enclosure at the house entrance.

After the proper positioning for trees has been determined, the placement of shrubs should be decided. Shrubs are usually thought of as tall (8 to 10 ft.), medium (4 to 6 ft.), and short (2 to 4 ft.). Within each size group there are upright, rounded, and spreading forms. The groups may be divided into deciduous, needle-leaved evergreens, and broad-leaved evergreens.

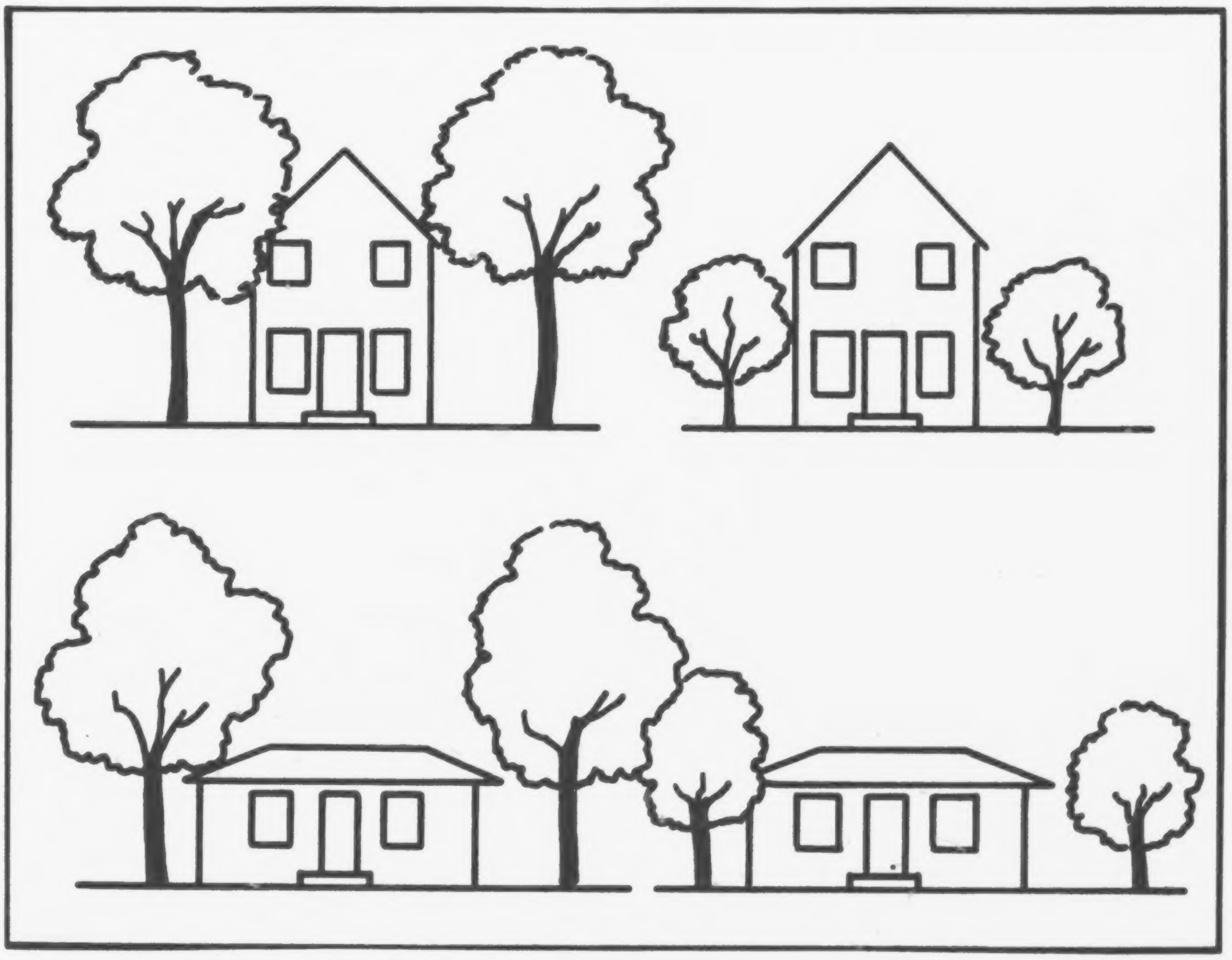


Figure 10. Scale (Size Relationship). Tall trees make a tall house seem shorter; small trees make a one-story house seem taller.

Appropriate spacing of shrubs will avoid either a "choked" or "gaposis" appearance when they reach mature size. Most shrubs are spaced the same distance from center to center as the mature width. Shrub centers should be from 4 to 6 feet from a house, wall, or fence. Hedges are planted much closer together than other plants.

In a highly formal planting, there are equal numbers of shrubs on each side of a dominant landscape feature. This balance may be gained with equal amounts of material (equal numbers and placement of species) placed in beds on both sides of the dominant feature (or "focal point"). Informal landscapes do not require such rigid planning of balance. In informal plantings small "heavy" looking plant groups may be balanced by larger amounts of "lighter" looking materials.

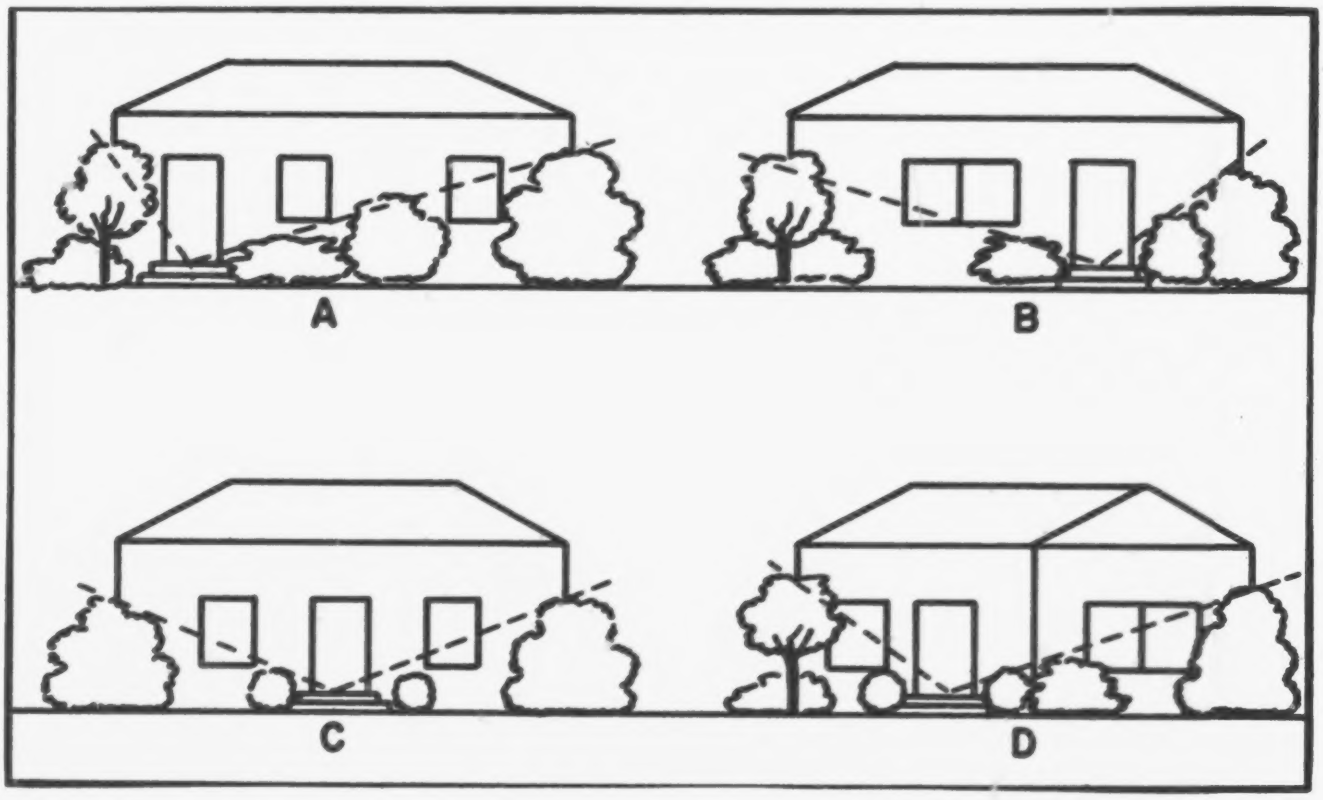


Figure 11. Focus on the entrance is obtained by selecting plant forms that fit within the dotted lines. Note that "C" illustrates symmetrical balance, while "A", "B", and "D" show asymmetrical balance; in both cases the visual "weight" is equal on opposite halves of the house.

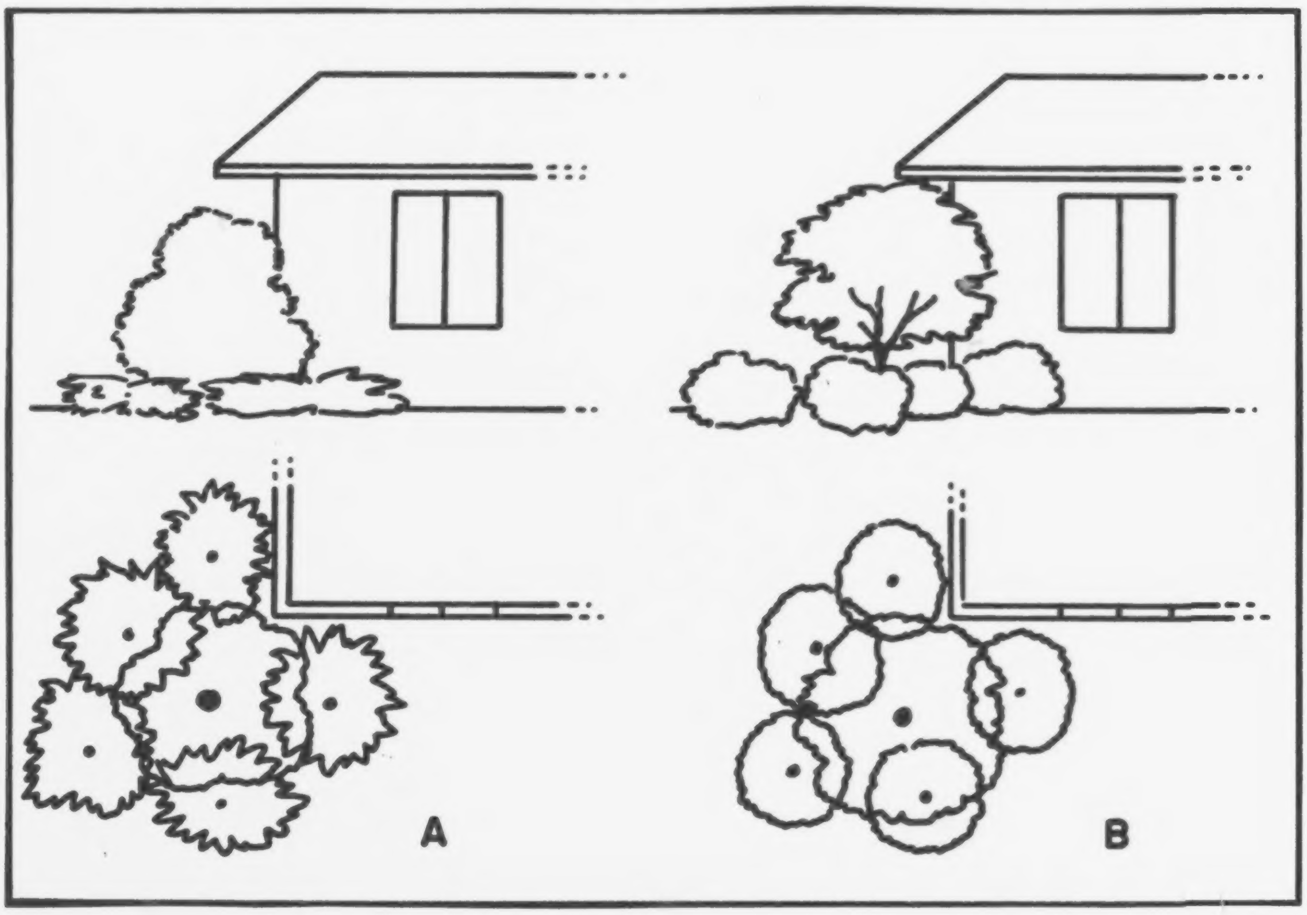


Figure 12. Corner plantings. A. Rounded deciduous shrub with low, spreading evergreens. B. Small tree with low, rounded evergreens.

Developing proper balance requires planning as to plant shapes, forms, textures, and colors. When plant and structural materials are in proper balance, attention is drawn to the focal point, which is often the entrance to the house.

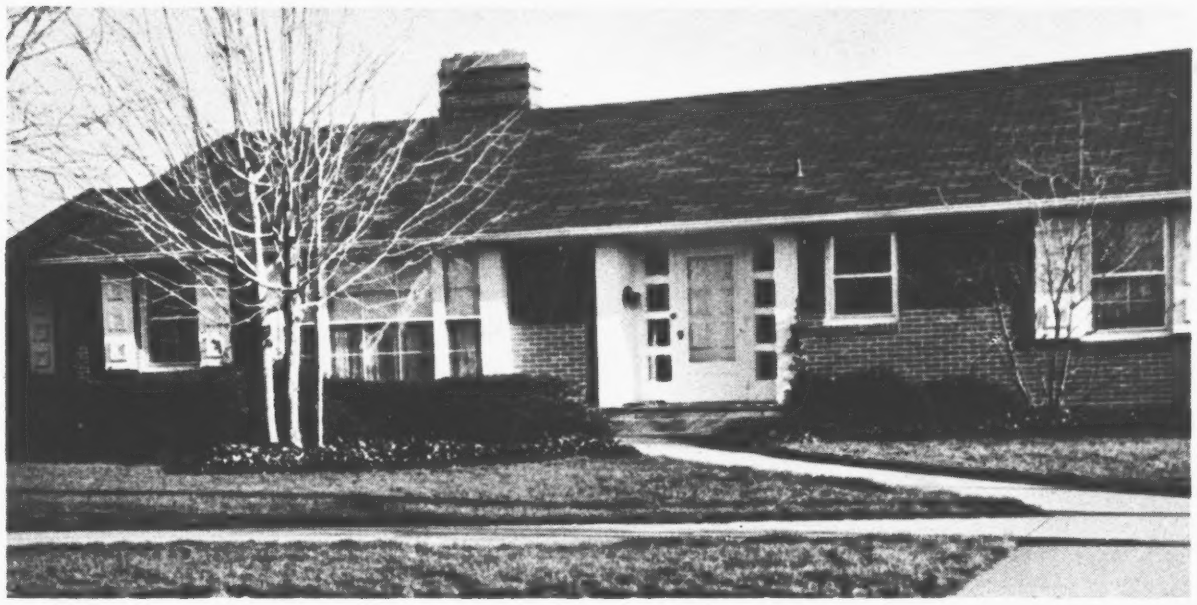


Figure 13. The viewer is led visually to the front entrance.

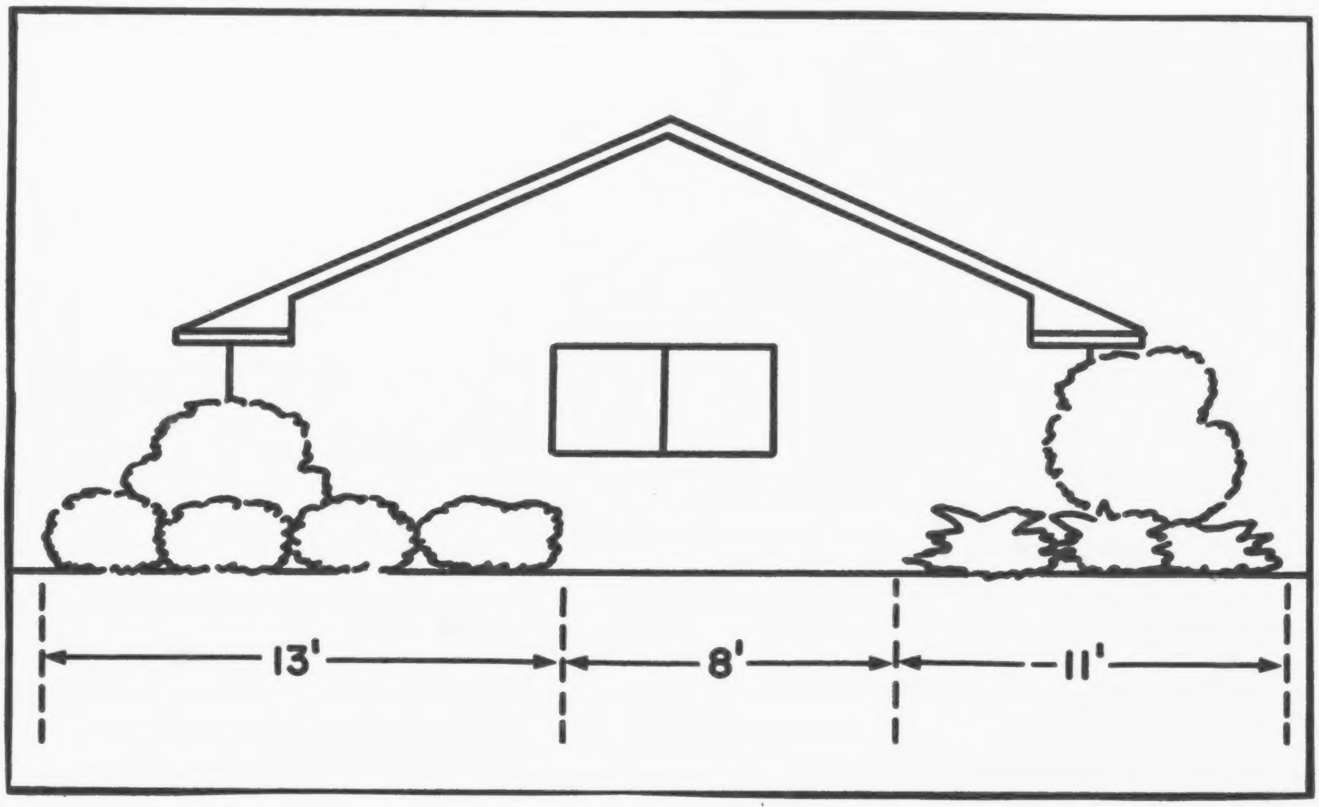


Figure 14. Side Yard Planting. A small tree at the right, with spreading evergreens is balanced by a wider planting of a rounded evergreen and low deciduous shrubs. Note that turf runs to the building wall for 1/3 of the space.

The use of both deciduous and evergreen material is usually desirable - a good proportion is about 1/3 evergreen to 2/3 deciduous. An entire planting of evergreens looks heavy in summer, while one of all deciduous materials looks thin and lacks interest in winter.

How different plant species are grouped within the bed is also very important. A tall shrub or tree may be made to look lower or "tied" to the ground by underplanting with lower, spreading shrubs. When grouping different height shrubs in a bed, remember to place the taller growing species at the back. Within a bed of more than one species, it is often good to place each species in informal subgroups, using odd numbers of plants (three, five, seven, etc.). The repeating of small groups of a species within a bed, or several beds close together creates "rhythm." This repetition "connects" parts of a bed (or closely located beds) together. This also gives "unity" to the design. These guides also hold true for grouping plants by form, color, or texture. It is better to repeat a few species or types in one area of the landscape than to use each species only once.

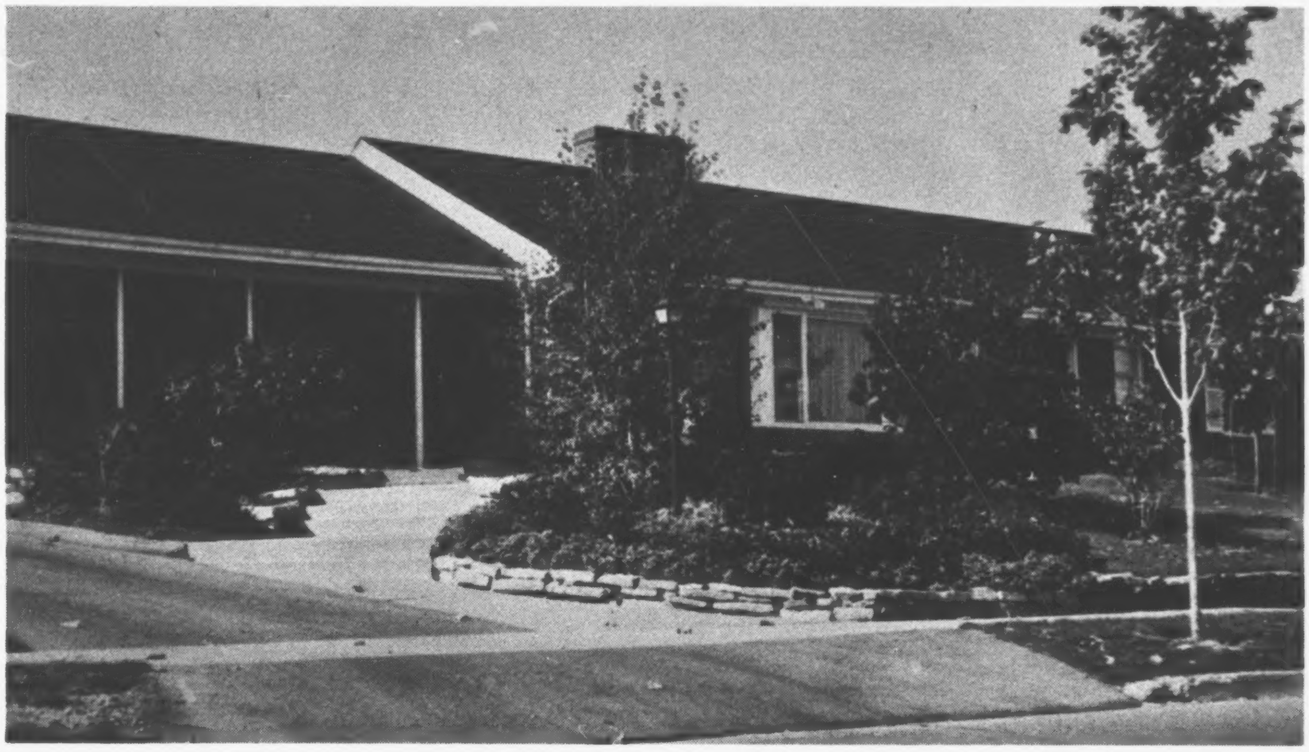


Figure 15. Changes in elevation should be made to appear gradual.

Using Texture, Color, and Contrasts

In the completed landscape, texture or color changes may be gradual or sharp. Sharp changes in the texture or color of elements gives bold contrasts. Gradual changes result in the smooth blending of elements. For the even blending of plant material, each plant group in a series should have a texture one-half as coarse or fine (as rough or as smooth - as heavy or as light) as the following groups of plants. The same is true for changes in color. Fine textures and subdued colors are better suited for small areas. Coarse textured materials with bright colors tend to "overpower" small areas. Plant materials with these characteristics are more attractive when viewed from a distance. Often strong contrasts in plant form or leaf size is used to attract attention. For example, Taxus pruned in a spherical shape might be used at each side of the front door to attract attention to the entrance. Strong contrasts should only be used for a specific purpose; otherwise, harmony, rhythm, and unity are lost and the design becomes an unpleasant distraction.

Landscape materials along walks and entrances should have characteristics which can be seen by people viewing them close at hand. People often walk slowly or pause in these areas. The nearness of the landscape materials allows a person to examine the fine texture of branches and leaves, pastel colors, and the smell of delicate flowers. These are landscape qualities that are not easy to enjoy at a distance.

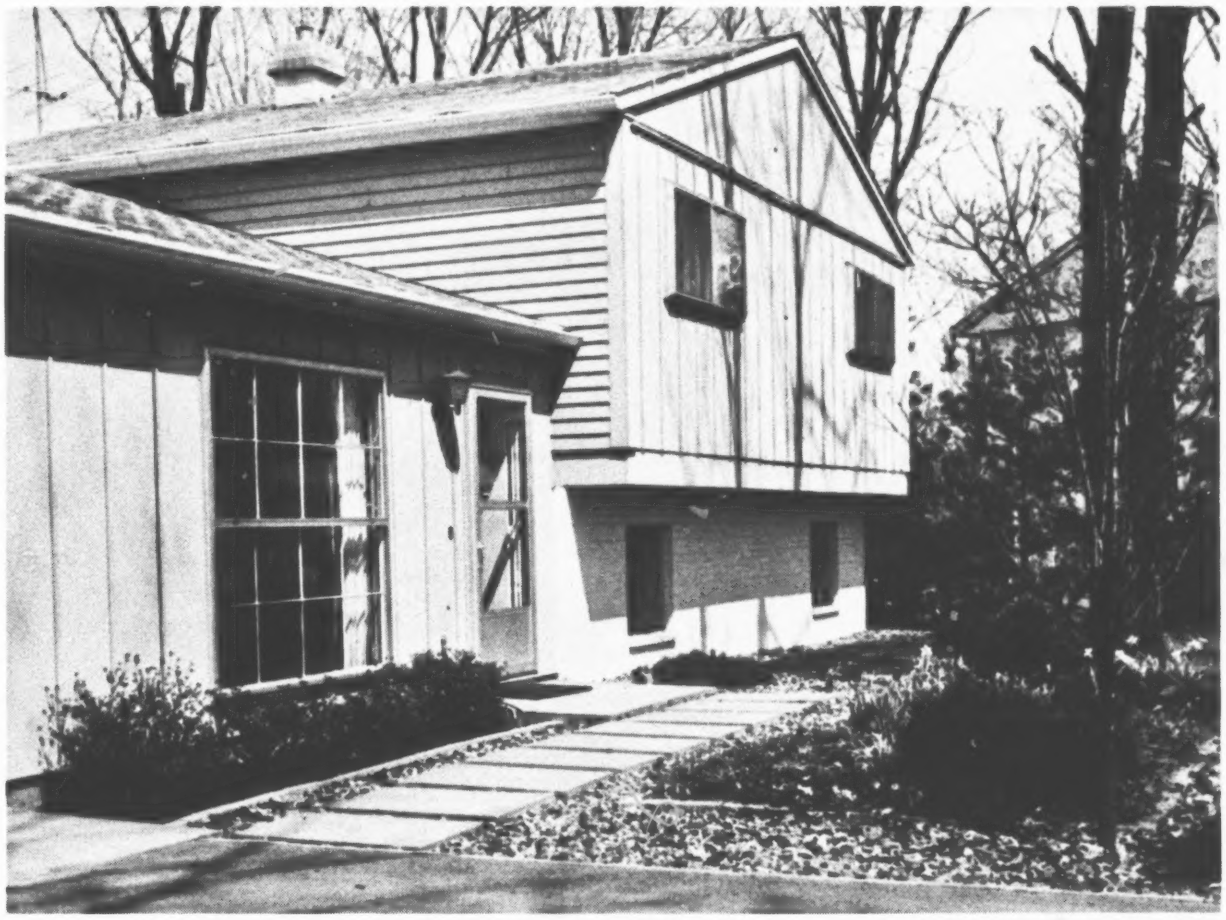


Figure 16. Walks should be wide, comfortable, and attractive.

Entrances should always be attractive and inviting. An entrance may be made more useful with the provision of a 6 to 8 foot landing area where people may pause as they enter or depart. An unusual (but serviceable) paving treatment would be good. Plants such as an espaliered shrub or tree, or a colorful specimen plant attractively grouped about an entrance can also accent the entrance. Attractive plant beds can be developed under picture windows and along the inside of walks running from the door to the driveway, but these should be secondary to the emphasis on the doorway itself. An often used technique is to plant such areas with low spreading shrubs and connect or "tie" these shrubs together with groundcover plantings. A small flowering tree underplanted with spreading shrubs or groundcovers might also be appropriate.

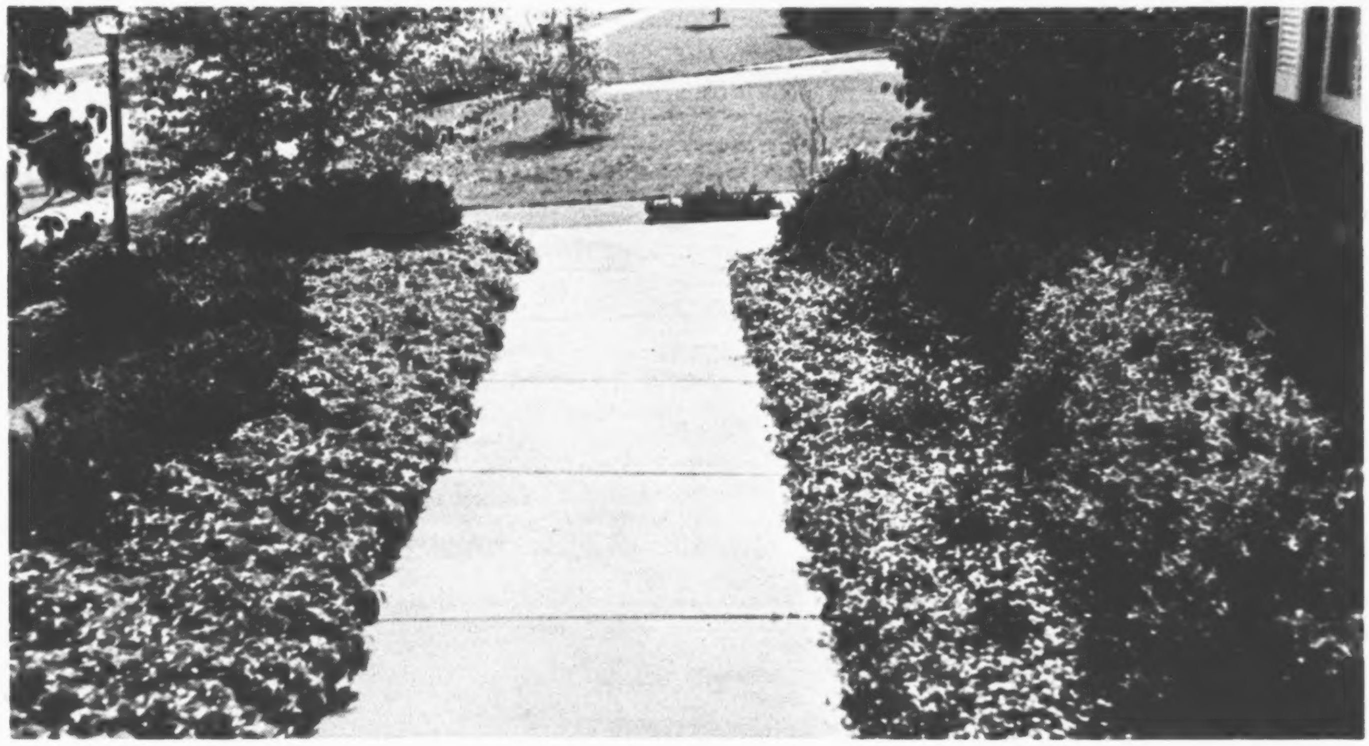


Figure 17. Plant materials along a walk may be "tied together" (or unified) with a groundcover planting.

Selecting Colors to Complement Structures

Homes are built from different materials. Notice that some building materials such as stone, dark brick, and dark painted or stained wood attract attention by looking "heavier" than nearby lighter colored areas. Such heavy areas may be contrasted or balanced by planting "heavy" appearing plants in front of "light" looking portions of the home. Colorful or bright plantings, such as orange-berried pyracantha, can also be used to contrast these "heavy" portions of the house. On an occasion when the designer desires to balance plantings about the dominant area, he may do this by using identical plant species and shapes on both sides of the most dominant part of the area being accented. Another way is to place small heavy appearing plant masses in one part of the dominant area and balance these with larger, lighter looking plant masses placed in other parts of the area.

Plantings against the front of the house should present a pleasant view both from the street and to a person walking from the drive to the entrance. Groupings should be natural and informal looking. They need not be continuous unless a high foundation must be hidden. Grass or groundcover plantings are useful for connecting these plant groups together into one pleasant composition.

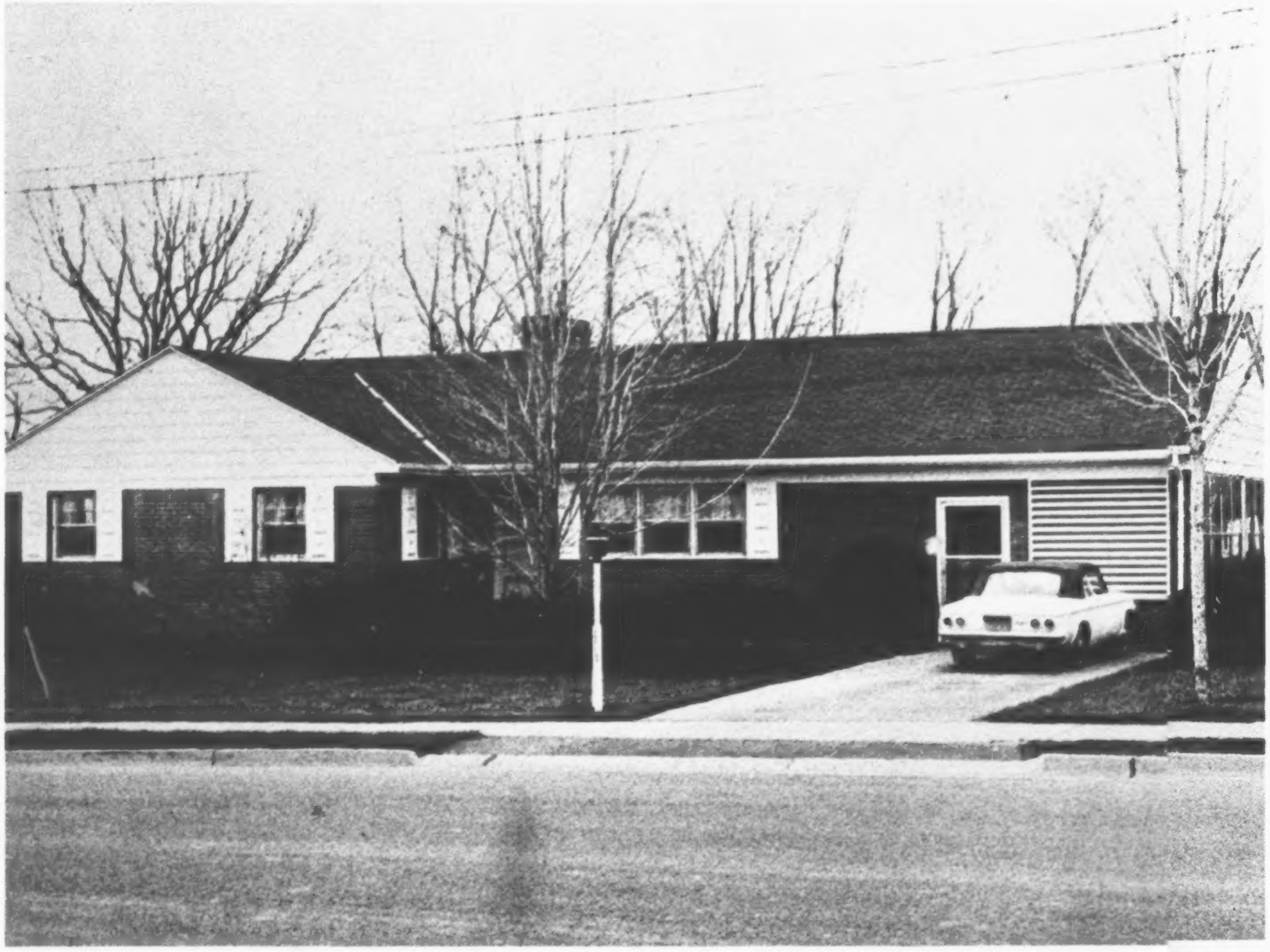


Figure 18. A low hedge provides enclosure and unifies the planting.

To enclose entrance areas and to help "connect" the horizontal lines of some homes with the ground, one may use low hedges or fences. This treatment gives the landscape a three-dimensional effect which is pleasing when viewed from any position within or outside it. These plantings capture and hold the eye of a visitor walking toward the door. Fine textured foliage plants and small flowering plants are more readily enjoyed in this area than when planted at a distance.

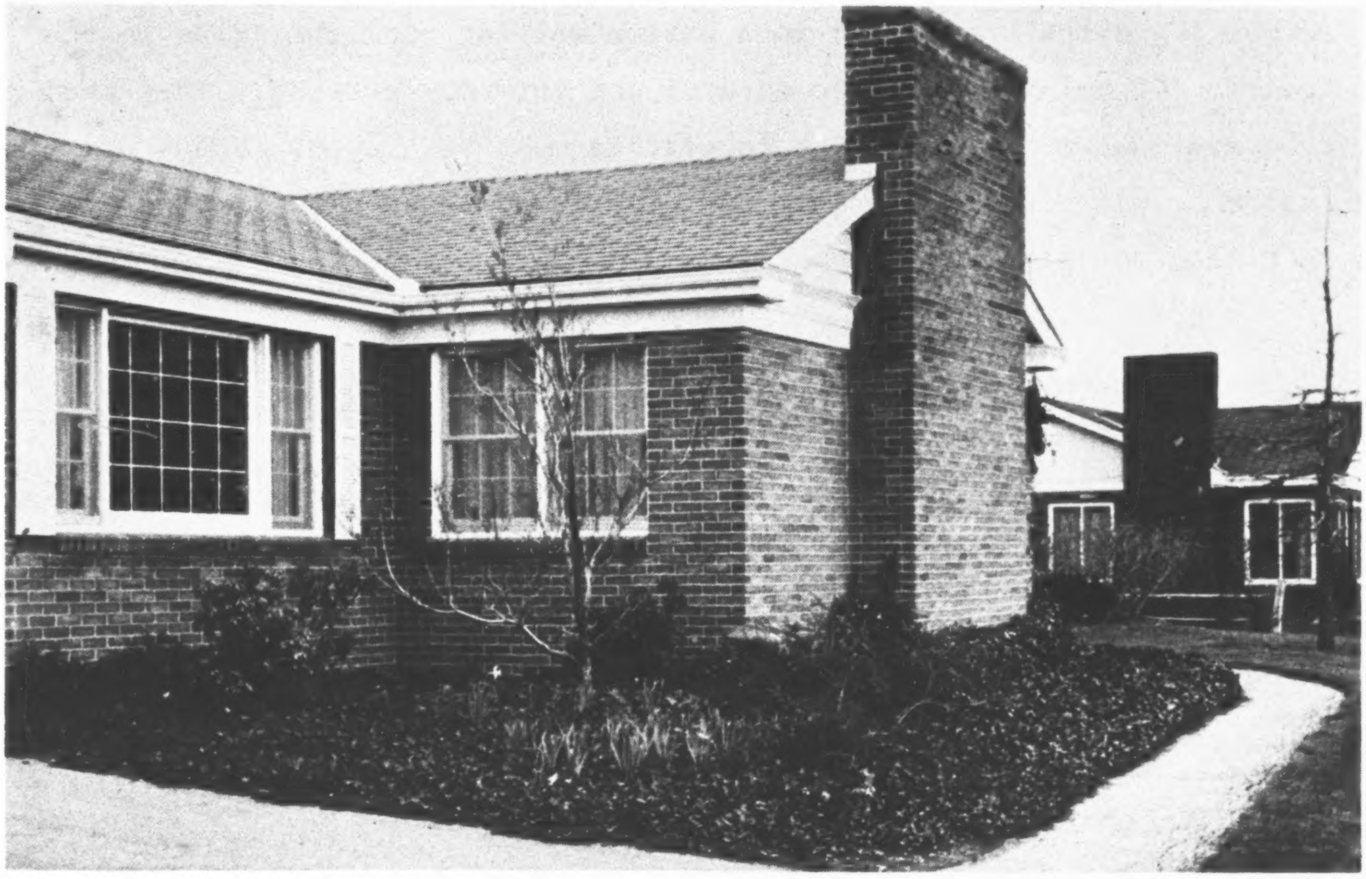


Figure 19. Large ground cover areas reduce lawn maintenance.

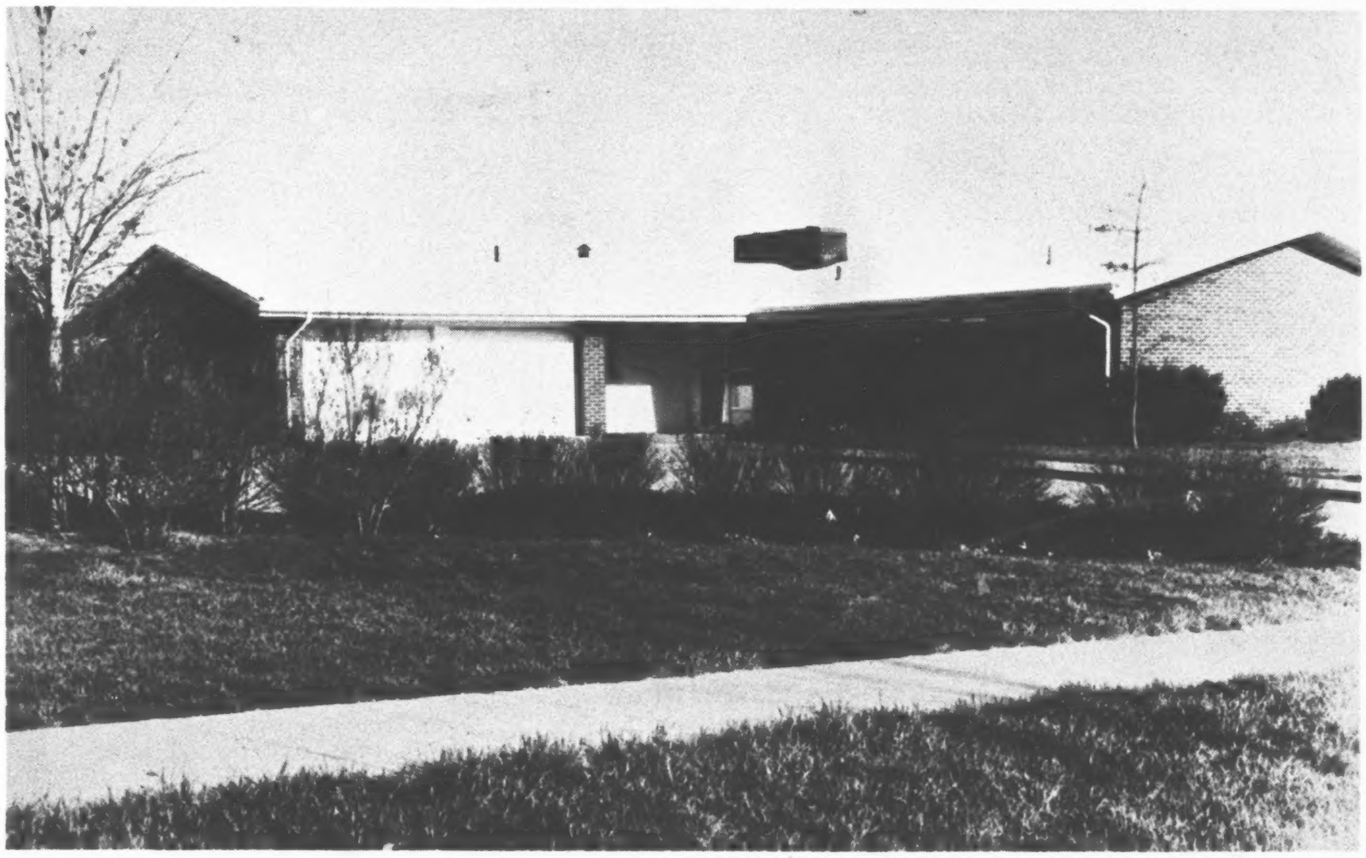


Figure 20. Property lines established with shrubs should be thin.

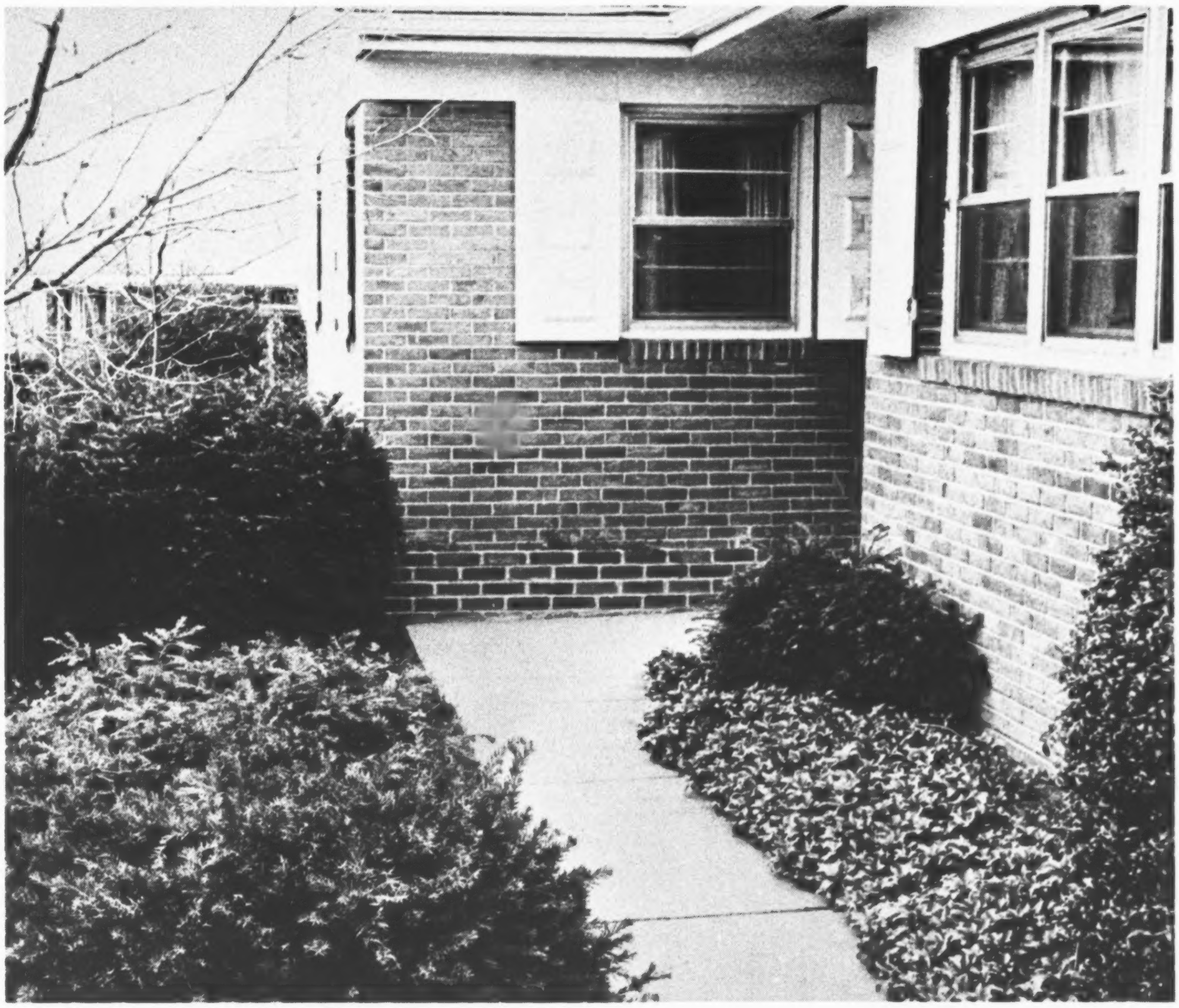


Figure 21. An attractive entrance planting.

It is not always necessary to place tall plantings at the corners of the house. Plantings here or in any location should be planned only if they serve a purpose in the landscape. Homes can be made to appear larger and lower by having plantings which sweep past the house and by using small, spreading shrubs for underplantings.

Using Flower Beds

Flower beds and roses have only very limited use in public area plantings. They are most often used in small gardens behind the hedges or fences. These plantings would be screened from the street, but they can be enjoyed by people looking from the entrance area. Spring bulbs are exceptions. Flowering bulbs are used in most public area plantings. Bulbs add color and beauty at a time when the owner will be anxious to see some signs of spring. Place bulbs in small, natural looking groups in groundcovers, among shrubs, and in planting beds.

Screening

Screening in the public area may be necessary to overcome unpleasant views of neighboring properties. Attractive neighboring views should, however, be accented if possible. Open lawns between adjacent houses gives the feeling of greater space because the boundaries are not indicated. If plantings on property lines are in the public area, plantings or fences with a light appearance should be used. Heavy plantings and fences restrict the feeling of flow between adjoining properties.

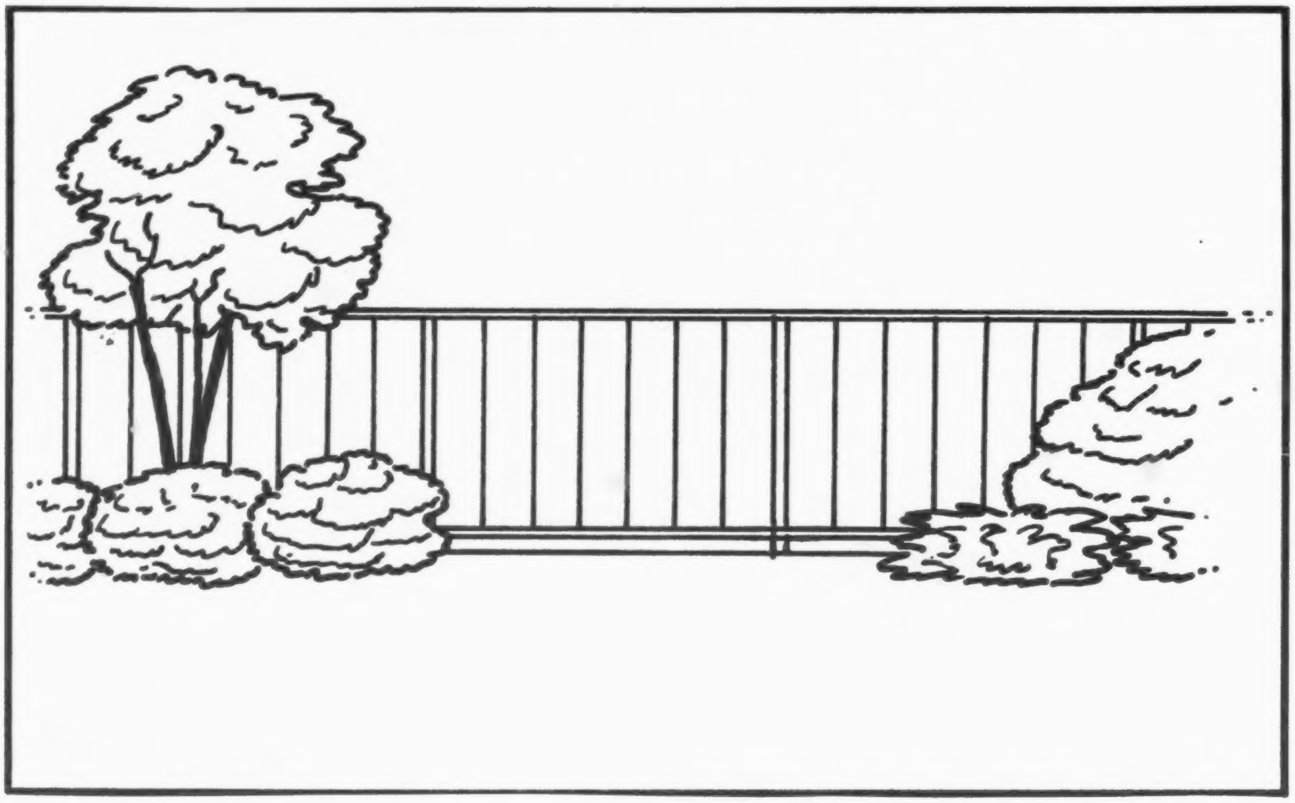


Figure 22. Screening. Use shrubs or small trees that are taller or shorter than the fence, but not the same height as the fence. Unplanted sections should be wider than the height of the fence. If the view is desirable, but enclosure is needed, substitute a lower, open-work fence, or a low planting of shrubs for the screening fence in the illustration.

On corner lots, it is best to leave the area at the intersection of the two streets undefined by fencing or plantings if possible. Sometimes corner plantings are needed to prevent pedestrian traffic from forming a path in the lawn. These "traffic controllers" can be developed with groups of low plantings or fencing. Roses, barberry, firethorn, and other low plants with thorns or sharp pointed leaves are especially effective for this purpose.

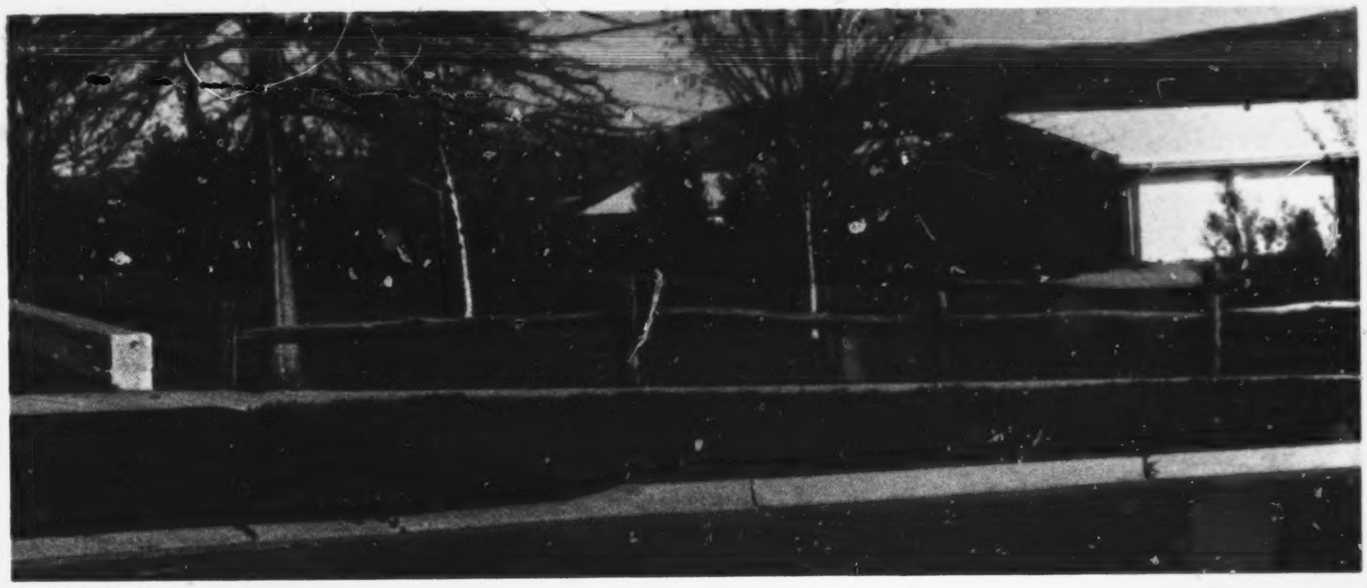


Figure 23. An open fence controls foot traffic without obstructing vision.

Landscaping the Sidewalk Area

Planting of trees on grass strips between the sidewalk and street is governed by three factors: (1) legal limitations, (2) utilities, and (3) width of the planting strip.

Many towns and cities have regulations regarding the types of trees which may be planted along sidewalks. These rules exist because some species of trees have bad rooting, fruiting, and height characteristics. Tree species noted for clogging sewer and water mains, such as poplars and willows, are often not permitted. Spacing between trees and the minimum distance that trees may be planted from intersections are often regulated by communities. This latter rule assures good vision for drivers. If trees are planted closer than 5 to 7 feet from sidewalks and curbs, their roots may cause the pavement to break.

The presence of utility wires will limit the planting selection to species which will mature without growing into the wires. Only small growing tree species should be planted in narrow planting strips.

For more information on landscaping the public area read Budget Landscaping, Reference No. 6, pp. 15-58.

Landscaping the Private Area

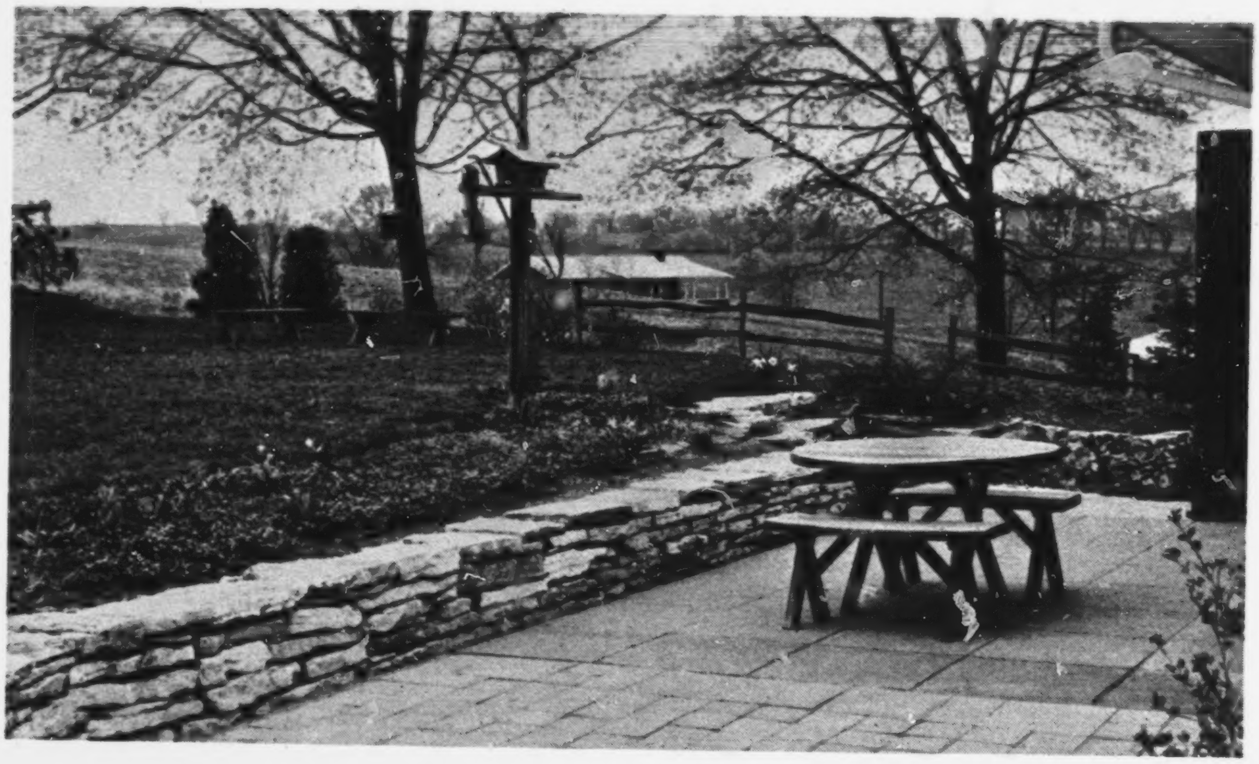


Figure 24. Pleasant views from a terrace should be enhanced.

Study the private area carefully. Stand next to the house and look away toward the boundary lines. Are there neighboring areas which should be screened and others which can be accented? Walk to the back of the private area and see if the views from this position can be enhanced. The private area should be developed toward some dominant feature in the landscape. A dominant feature may be a distant view, an interesting rock formation, a specimen plant, or a combination of plantings and a fountain or sculpture. Attempt to develop the private area to make use of the existing desirable plant materials and structures. Use lawn and planting beds to complement the dominant feature. Lot shape and size influence the choice of directions in which the private area may be developed.

Square lots allow for the greatest choice in development. Narrow, rectangular, or pie-shaped lots limit the possible ways in which the private area can be developed, but can provide an interesting challenge.

Private areas should include some open space for games. These open areas are also relaxing when viewed from the house or patio. The combination of lawn areas with the patterns of planting beds and buildings should be attractive and inviting.

Formal or informal patterns may be used in the private area, but informal designs are usually appropriate, especially for houses with modern architectural lines. However, designers often combine aspects of both.

Private areas should be considered as an extension of the living and relaxation areas of the house. Sliding glass doors, glass walls, and picture windows are often used for viewing the private area from inside the home. If flower beds or pools are desired, place them near the house where they can be easily seen and enjoyed.

Privacy is a key consideration in landscaping this area. Without privacy, a family does not feel free to use this area for parties, games, relaxation, and outdoor meals. The creation of a feeling of privacy without an impression of confinement is worth the effort involved. Review family needs before starting to design the private area.

Planning the Terrace

Many families desire "patios" (more properly -- paved terraces), in the private area. A paved terrace can be designed as a connecting link between the house and the private area. This can provide a point around which the private area may be developed. Terraces are useful for outdoor lounging, cook-outs, and summer parties. They may be almost any shape. Rectangular, oval, square, or "L" shaped ones are common. The form may be determined by the type of material to be used. Some paving materials are restricted as to the shapes and patterns for which they may be used. The selection of terrace materials, patterns, colors, and shapes allows a designer to express his ideas.

"Patios" often include raised planting beds, low walls and hedges, plant islands, crocks and pottery, pools, and fountains. Some of the formal or informal lines used in the terrace are often repeated in plant beds and lawn borders.

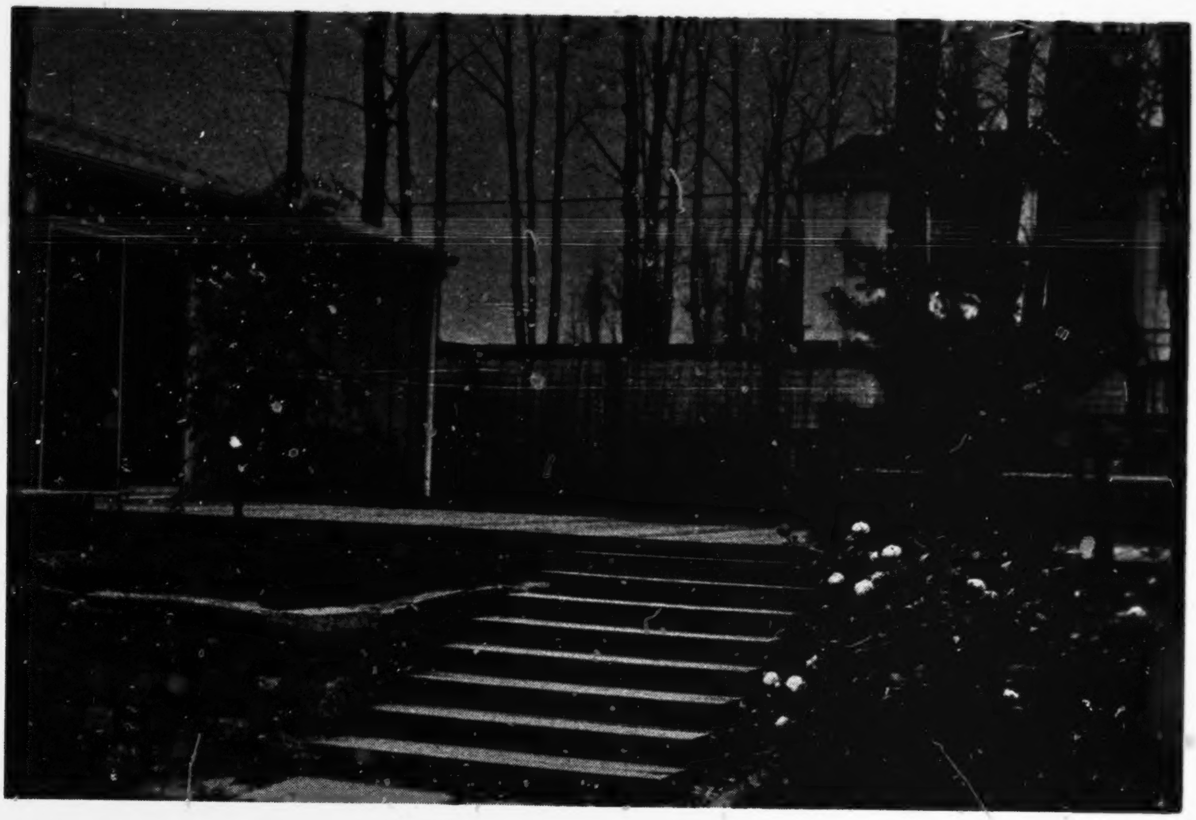


Figure 25. Wooden decks are serviceable. Screening fences can be beautiful.

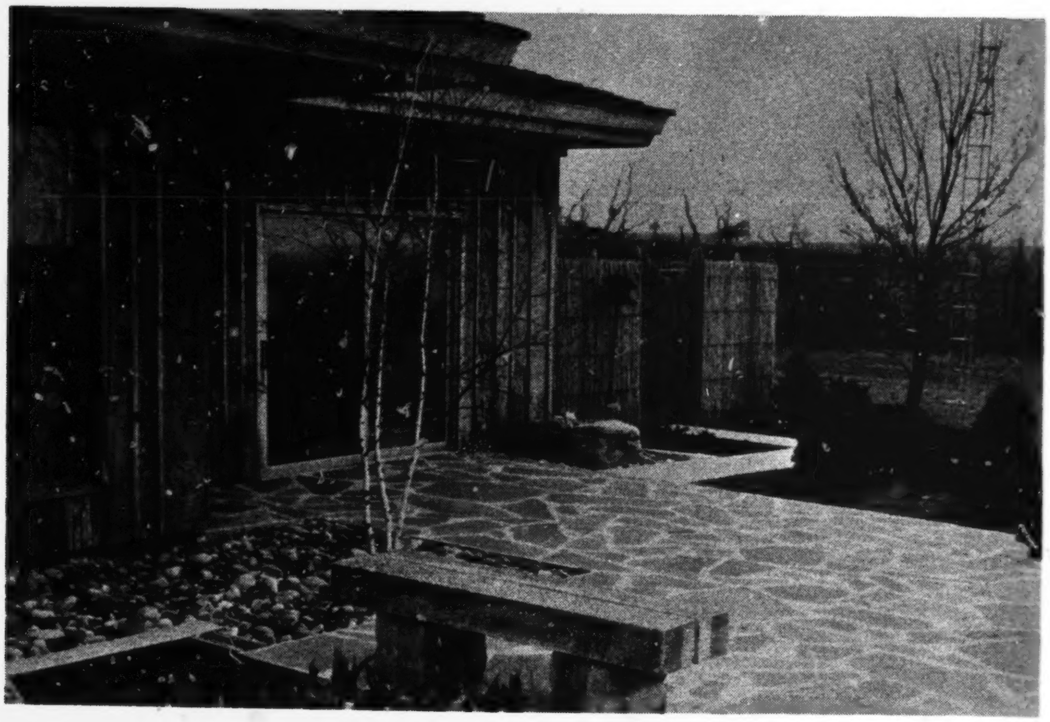


Figure 26. A paved terrace links the indoor and outdoor living rooms.

Screening the Private Area

Screening and enclosures for the private area must be designed to control the view into and from the area. Screening materials should be placed to give enough privacy, but to avoid a harsh, cell-like enclosure. The screening materials should also give necessary control over the traffic of people and pets and should help to moderate wind, exposure, and noise. Both the type and the amount of screening will be limited to a large degree by neighboring properties. When it is possible to enjoy viewing a neighboring property without loosing personal privacy, this view should be developed rather than screened. Planning such as that just described greatly "enlarges" the private area beyond its physical boundaries.

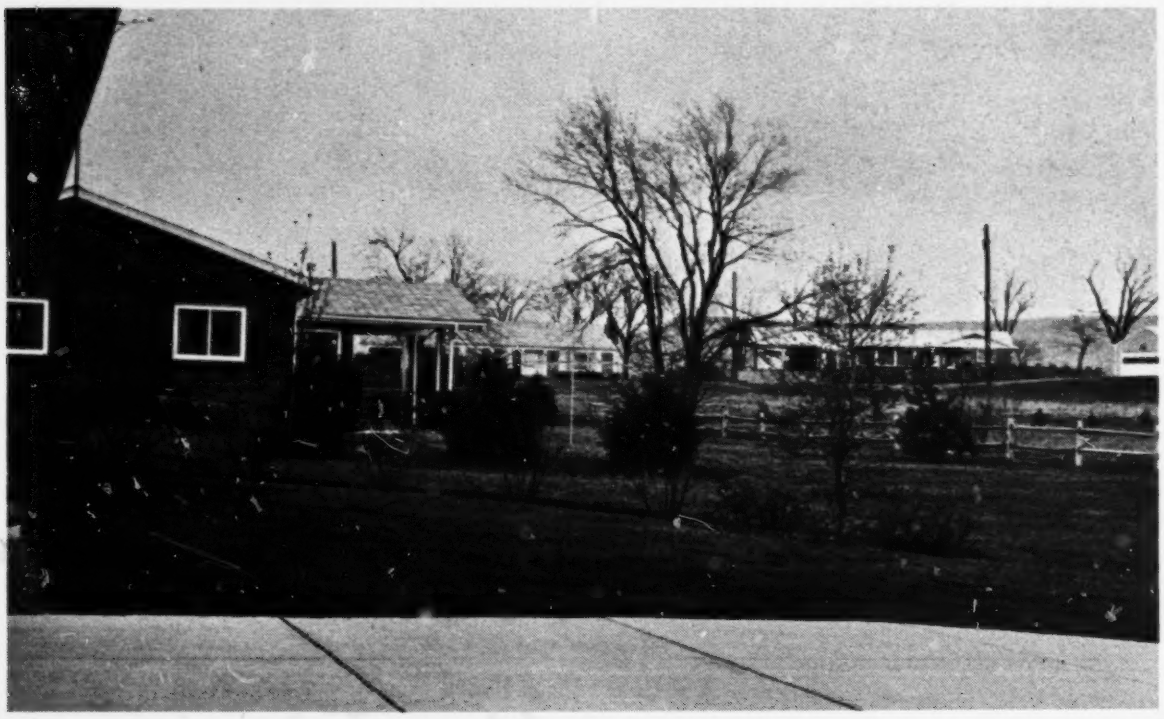


Figure 27. Screening materials may be evergreen or deciduous.

The type of screening materials selected will be determined by the characteristics of the site and the owner's desires. If the site requires a low screen (six feet or under) and space is not a limiting factor, then a wide variety of plant material may be selected. Deciduous shrubs give a greater range of fruit, flowers, and seasonal changes, but they do not have the year long density of evergreens. Where space is at a premium, solid fences or columnar evergreens are used to provide privacy. All screening situations will not call for solid plantings. Trees with underplantings often are used instead of hedges. Plant and structural material are sometimes combined to give dense screening. For example, a fence with Austrian pine or hemlock planted behind it may be very attractive.

The backside of structures and plantings should always be attractive to nearby houses. When desirable, plan for gates or other openings for crossing to adjoining properties.

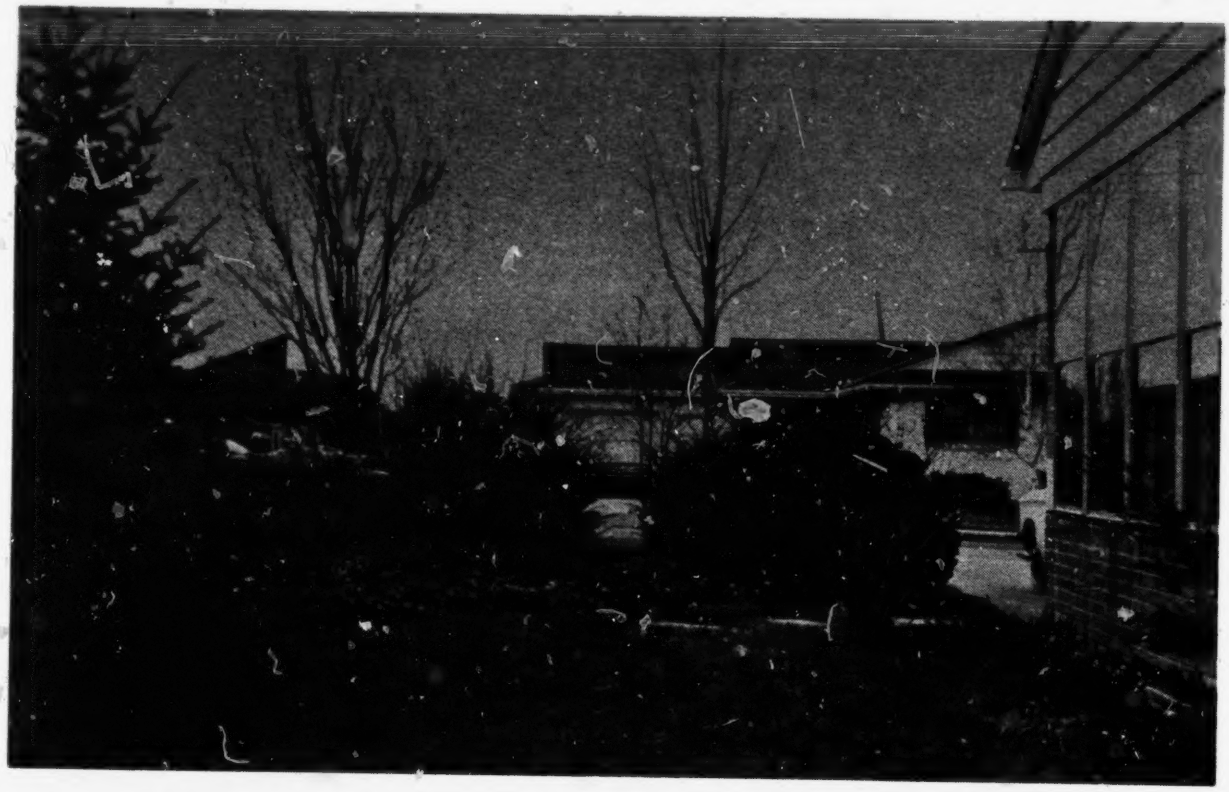


Figure 28. A combination of deciduous and evergreen plants is interesting.

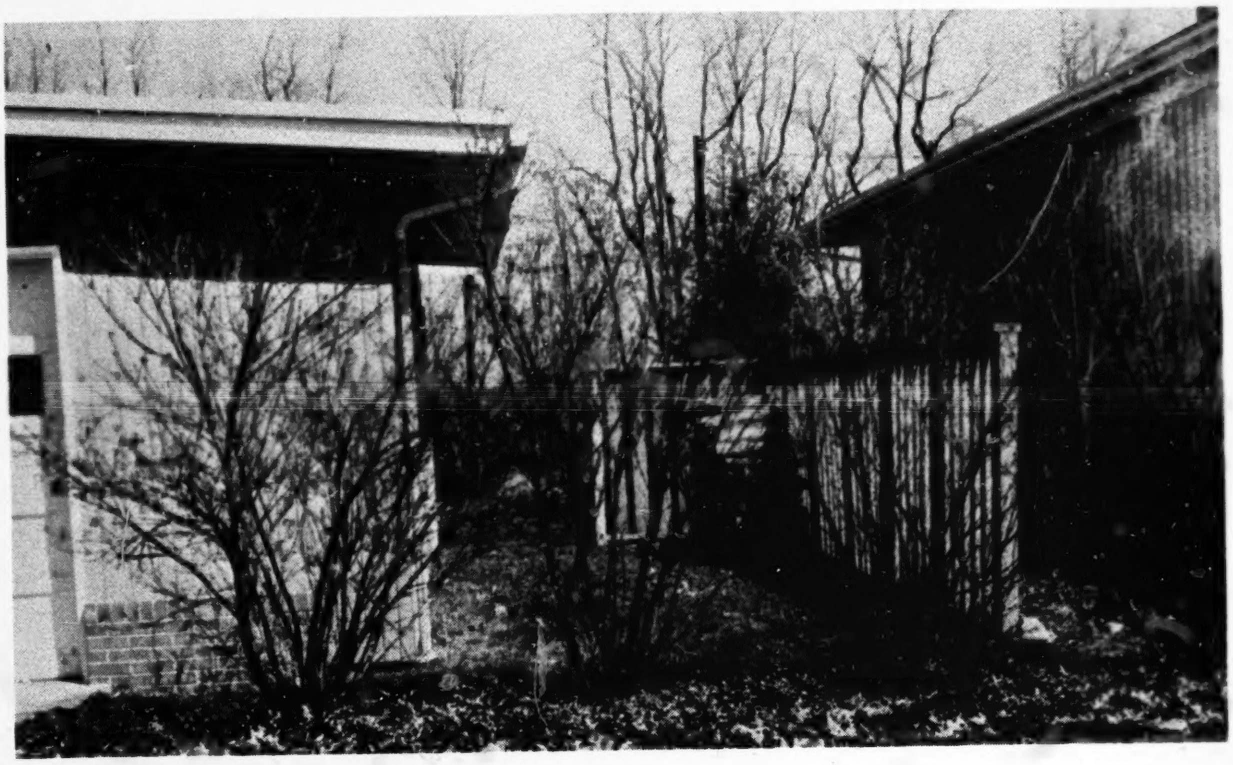


Figure 29. A service area screened by a fence and shrubs.

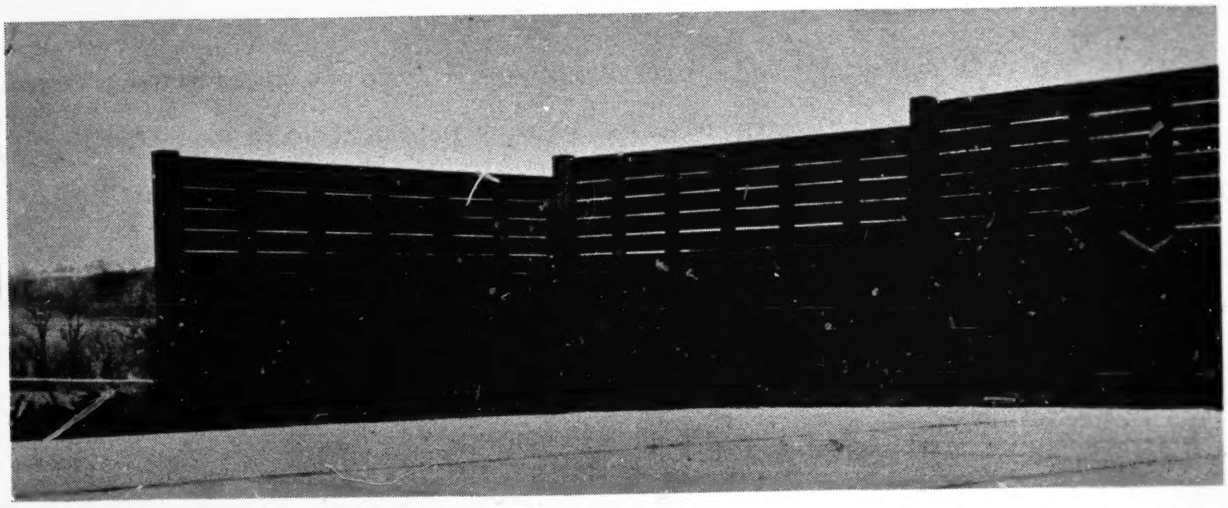


Figure 30. Appropriate plants combine well with a screening fence.

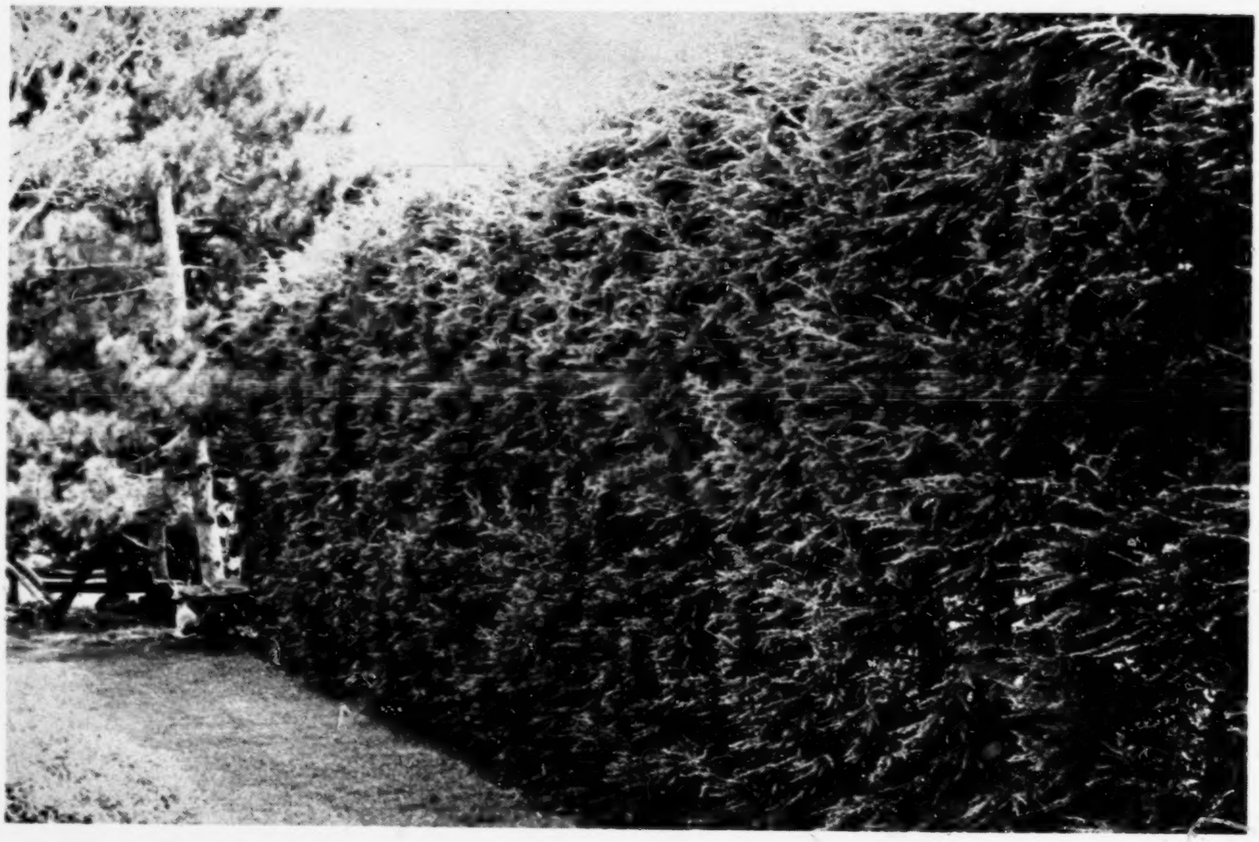


Figure 31. A dense hemlock hedge reduces noise and dust.

Using plants and structures to reduce wind, noise, and sun is generally most efficient when combined with the screening materials. Tall plantings and solid fences are very useful for windbreaks. Evergreens are more useful for windbreaks than are deciduous materials. Dense plantings, especially evergreens, help to reduce noise. Trees, awnings, and other devices may be used to shade specific areas. Trees should be planted about 20 feet southwest of the area to be shaded in the afternoon.

Placing Hedges, Shrubs, and Walls

Low hedges, fences, and walls can be used within the private area to control traffic and to suggest separation. A low wall along the edge of a terrace gives a sense of "division" but not a barrier from the nearby lawn area. Low hedges will direct people to walks and paths. These dividers achieve their purpose without blocking the view.

Planning the Planting Bed

Planting beds are designed to complement both the private area development and patterns of the lawn and patio. These beds can contain other features of interest to attract one's attention as his eye is led to a dominant feature at a distant end of the private area. In shallow private areas where it is hard to develop one dominant feature these beds will become primary sources of interest. In such cases the designer must take special care to design the beds to be attractive and gain attention. Each bed must be in harmony and unity with the others in the private area.

Planning the Lawn

Do not destroy the open lawn area with the use of several scattered plants. This same rule applies in the public area. A lawn area does not have to be square or rectangular to double as a play area. An informal design large enough to cover the needed square or rectangular size may be used. Some examples of game space requirements are: croquet, 30' x 60'; badminton, 24' x 54'; and volleyball, 40' x 70'. Some private areas may be too small for a lawn area. Where space is at a premium or in cases where maintenance would be difficult, it is often better to develop a paved (with brick, stone, etc.) courtyard with planting beds for shrubbery, trees, and bedding plants. Where space permits and a lawn is desired, the paved area should be in proportion to surrounding beds and structures. Attention to scale and proportion keeps one element in the landscape from being "overpowered" by another.

Decoration of the public and private areas makes them interesting. Ornamental objects such as sculptures, birdbaths, fountains, pools, or specimen plants are often used for this purpose. When combined with plantings these items may be used as main features or focal points to be complemented by beds and lawn patterns. Use good taste and restraint in selecting ornaments. Avoid items which look entirely out of place. For example, pink plastic tropical birds look out of place in a Pennsylvania landscape. Ornaments which stand out by themselves as dominant features will spoil or detract from the landscape unless the rest of the garden is made subordinate to them.

Private areas are not always level. Areas that slope uphill or away from the home are especially challenging to develop. This situation calls for experience with screening and structural problems usually not needed when designing level private areas. Steeply sloped land lends itself to terracing, rock gardens, and other more creative uses.

In developing the private area, always keep in mind the maintenance requirements of the lawn and plant materials. For more reading about developing the private area, see Budget Landscaping, Reference No. 6, pp. 59-107.

Landscaping the Service Area

Planning the Facilities

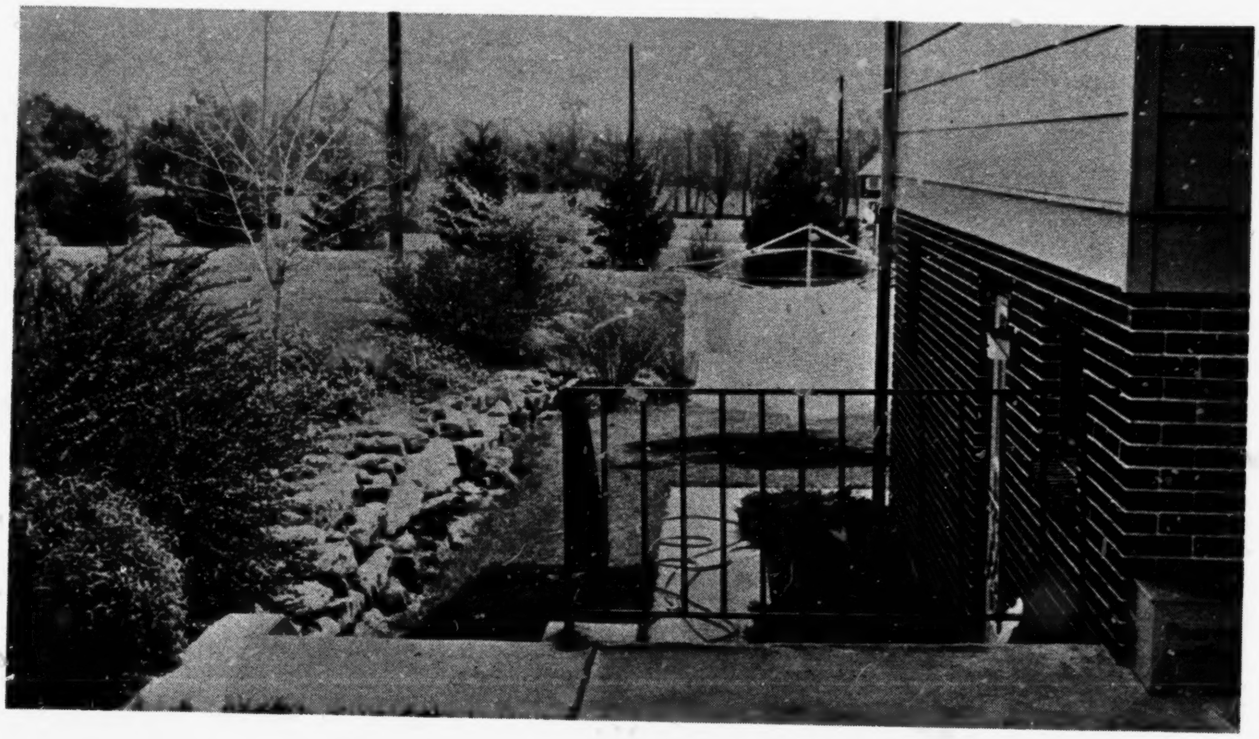


Figure 32. Shrubs soften grade changes in the service area.

The service area should be conveniently located. Its size is determined by the service needs of the family. The location of facilities in the service area should be carefully planned. Walks are needed for easy access to and from the service area. They should be paved to avoid tracking dirt and mud into the house. Hard surfacing materials like asphalt can be used for paving. Areas under clotheslines often are paved to allow easier movement of laundry carts and to eliminate the inconvenience of early morning dew and of soiling dropped clothes. If garbage and trash cans are stored within this area, an attractive rack or holder is needed to prevent the cans from overturning.

Screening the Service Area

Service areas should be screened from public and private areas. Screening needs are determined by viewing the service area from different portions of the public and private area. Both structural and plant materials may be used for screening purposes. If the service area is used as a play area for small children, for safety reasons it should be clearly visible from the kitchen or other work area in which the mother spends most of her time.

Placing Plant Materials

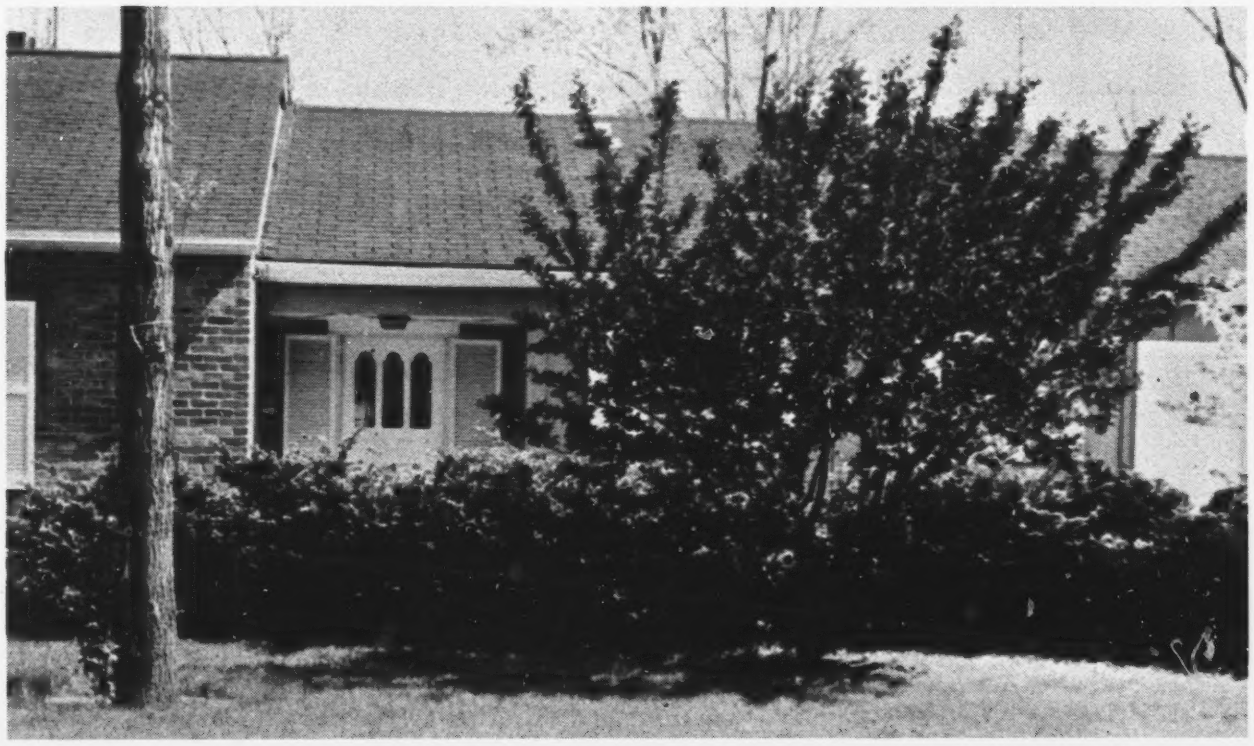


Figure 33. Specimen trees may be deliberately positioned to block a direct view into living room windows.

Using Specimen Plants

Some plant materials are particularly interesting because of some outstanding quality. These plants are often used as specimen plants. They may be selected for interesting form, leaf shape or color, outstanding flowers, or brilliant fruit. Specimen plants are usually planted individually. Planting them in open lawn areas provides maximum opportunity for the plant to be viewed. Specimen plants are usually restricted to trees and medium or large shrubs. Many homeowners make the mistake of breaking up lawn areas with too many "specimen" plants. One or two in the public or private area are usually enough. The placement of specimen plants should not clutter the lawn.

Grouping Plant Materials

Except for specimen plants, shrubs and trees look best when planted in groups or beds. This avoids dividing the lawn into several small sections. Scattered placement of plant materials destroys unity and harmony by dividing the landscaped area into many disconnected pieces. Groupings of plant material should be at the edges of the lawn area, and should conform to the shape of the lawn area. Plants used in beds should be in proper scale to each other and to nearby structures. Avoid sudden contrasts in scale. For example, small shrubs would not be planted in beds around a large, massive tree or a large house.

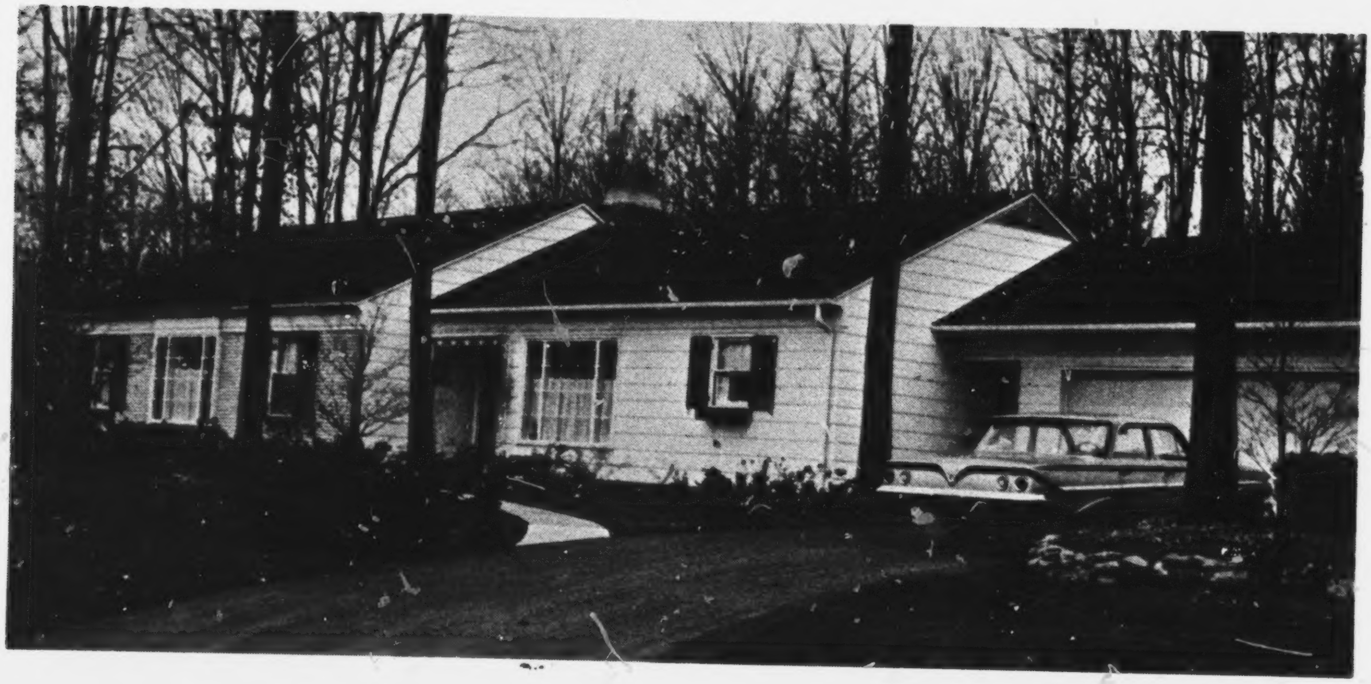


Figure 34. This wooded lot was carefully thinned to let in more light so the underplanting material will grow well.

Thinning and Underplanting

Sometimes the plant materials on the site need thinning, especially in heavily wooded lots. Removal of some trees may be done to increase the amount of light reaching the ground or to create a pattern from a mass of existing vegetation. When thinning trees on a lot, be careful to keep the best species and specimens. Occasionally, underplantings on a wooded lot may be desired. Shade tolerant species such as hemlock, dogwood, rhododendron, and mountain laurel can be used in groups along the border of the wooded area. Placing these species along the border of the wooded area allows enough light to reach the plants to encourage flower bed development.

Planning

While you were reading this problem area, we hope you yielded to the temptation to do more "doodling" with the Area Layout Plan you have made. You should, by this time, have a good idea of what should go into your landscape plan.

In the next problem area we will take up the mechanical aspects of landscape structures and give you some further ideas on selecting appropriate plants for the plan on which you are working.

SUGGESTIONS AND REFERENCES FOR THE TEACHER

Ideas for solving landscape problems are obtained in many ways. Students need many experiences in layout of landscape areas, and in developing alternative solutions to landscape problems. No one "pulls ideas from a hat." They come from a mental "storehouse" which accumulates over a period of time. The following suggestions will help the aspiring landscape designer to build such a "storehouse" of ideas.

Learning Resources

References:

Budget Landscaping, Reference No. 6, pp. 15-107.

Gardens are for People, Reference No. 18.

Landscape Planning, Reference No. 30.

Landscaping Your Home, Reference No. 35.

Sunset - Garden Plans, Reference No. 48.

Sunset - How to Improve Your Home by Landscaping, Reference No. 25.

Sunset - Landscaping for Modern Living, Reference No. 48, pp. 35-58, 161-164.

The Art of Home Landscaping, Reference No. 49, pp. 77-112, 143-184.

Audio Visual Aids:

"Basic Techniques for Home Landscaping," Film Bookings, Motion Picture Service, U.S.D.A., Washington, D. C. 20205 (11½ min., 16mm.).

"New Guidelines for the Well Landscaped Home," Film Bookings, Motion Picture Service, U.S.D.A., Washington, D. C. 20205.

"Landscape for Living," American Association of Nurserymen, 835 Southern Building, Washington, D. C. 20205.

"Landscaping for the Future," Film, New York State College of Agriculture, Cornell University, Ithaca, New York 14850. ($2.50).

"Plan Before You Plant," Film, California Agricultural Extension Service, University of California, Berkeley, California 94720.

Suggested Learning Activities

1. Have students collect magazine clipping examples (in color if possible) of good designs for the public, private, and service areas. These should be mounted on 8½ by 11 inch cards for easy display and storage. A goal of at least ten per student for each area would be appropriate.
2. From the site analyses and family interviews obtained earlier, have each student draw at least three different area layout plans.

3. Visit at least two well-landscaped residences, and have the students, working in teams, draw an area layout plan (for the landscape as it exists) for each. Project these on a screen and hold a discussion of possible alternative solutions for the development of the areas.
4. Make a slide collection of the front view of new homes, without plantings, and project them onto a large tablet of white paper. Using a wax crayon, sketch in an appropriate planting. For alternative plantings, merely remove the sheet and sketch another scheme on a new sheet of paper. After demonstrating the technique, invite students to sketch some planting ideas for class discussion.
5. Have students develop clipping collections to illustrate several good examples for each of the following:
    - a. design
    - b. scale
    - c. balance
    - d. rhythm
    - e. focus
    - f. harmony
    - g. unity

    A brief, written explanation should accompany each example.

Test

1. What purposes are served by the public area, private area, service area?
2. What devices can be used to connect the public, private, and service areas?
3. What is "balance"?
4. Give the technique for attracting attention to the front entry of a house.
5. How are trees used to establish "scale"?
6. How does one determine the appropriate spacing for shrubs?
7. In most plantings, what should the proportion of evergreen to deciduous material be?
8. Why should identical plants be planted in groups rather than mixed with other kinds of plants?
9. Why should strong contrasts in shape, texture, and color be used only for specific purposes, and with restraint?
10. For what purposes are groundcovers used?
11. How does one achieve "unity" in a design?

PROBLEM AREA 5

STRUCTURES AND PLANTS

Student Learning Objectives

Problem Area 5 is concerned with learning about structures and plant materials used in landscapes. The primary objective of this problem area may be to develop the ability to design a plan for landscaping a site. The primary objective may be divided into the following secondary objectives:

1. To develop a working knowledge of landscape structures and their planning.
2. To develop the ability to prepare structural plans.
3. To develop the ability to develop planting plans.
4. To develop a working knowledge about the kinds of plants and their correct uses for a site.

Key Questions

1. How are landscape structures used in a landscaping problem?
2. What are the structural materials and how can they be used?
3. What selection factors are important when selecting plant material for the site?
4. How are the various kinds of plants used to get the desired effects from a landscape?
5. How are the structural plan, the planting plan, and the finished landscape plan developed by the landscape designer?

New Words

Characterized - referring to a trait, quality, or property of a plant

Conical - cone-shaped

Cultivar - variety

Durability - the property of being strong

Hardiness - ability of a plant to grow in a particular climate

Individuality - the quality which makes one plant different from another

Opaque - something which will not permit light to pass through it

Perennial - continuing to live from year to year

Preservative - a material that helps prevent decay or loss

Species - a distinct kind of plant with a particular genetic composition

Susceptible - weak, capable of being infected by diseases or insects

Trellis - a structure or frame to support creeping plants and vines

Planning Landscape Structures

Some kinds of structures are used in every landscape. These include: (1) walks and drives (transport structures), (2) walls (retention structures), (3) fences (division and screening structures), and (4) terraces or lawns (recreational structures). All of these have size, form, texture, and color. The appropriate materials should be selected, and the design should be such that these structures contribute unity and harmony to the landscape. You may wish to read further about these ideas in Landscape Architecture: The Shaping of Man's Environment, pp. 173-194, Reference No. 27.

Transport Structures

Transport structures include drives, walks, and steps. They facilitate movement to and from the house. Transport structures are used where turf and hard packed soil are not adequate for pedestrians and vehicles. The shape, size, and location of these structures will vary to meet the needs of different properties.

Walks - Major walks should be wide enough to allow two people to walk abreast. They should be about 4 to 6 feet wide. Secondary walks may be narrower. Two and one-half to three feet is usually adequate. Walks should be placed so that they are convenient and attractive.

Avoid putting walks where they will divide lawns into small sections. Major walks should be hard surfaced. Hard surfaced walks are safer, easier to walk on, easier to remove snow from, and longer lasting than walks of gravel, tanbark, or similar materials. Gravel, tanbark, hard surfacing, and stepping stones may, however, be used for secondary walks. Stepping stones include flagstone, concrete squares and rectangles, patio blocks, and other hard surfaced materials. Flagstone may be very slippery in shaded areas because of algae growth. Stepping stones should be placed with centers 26-28 inches apart. You should select materials which blend with the area in which the walk will be placed. Use medium color tones to avoid glare from light colors and heat from dark colors.

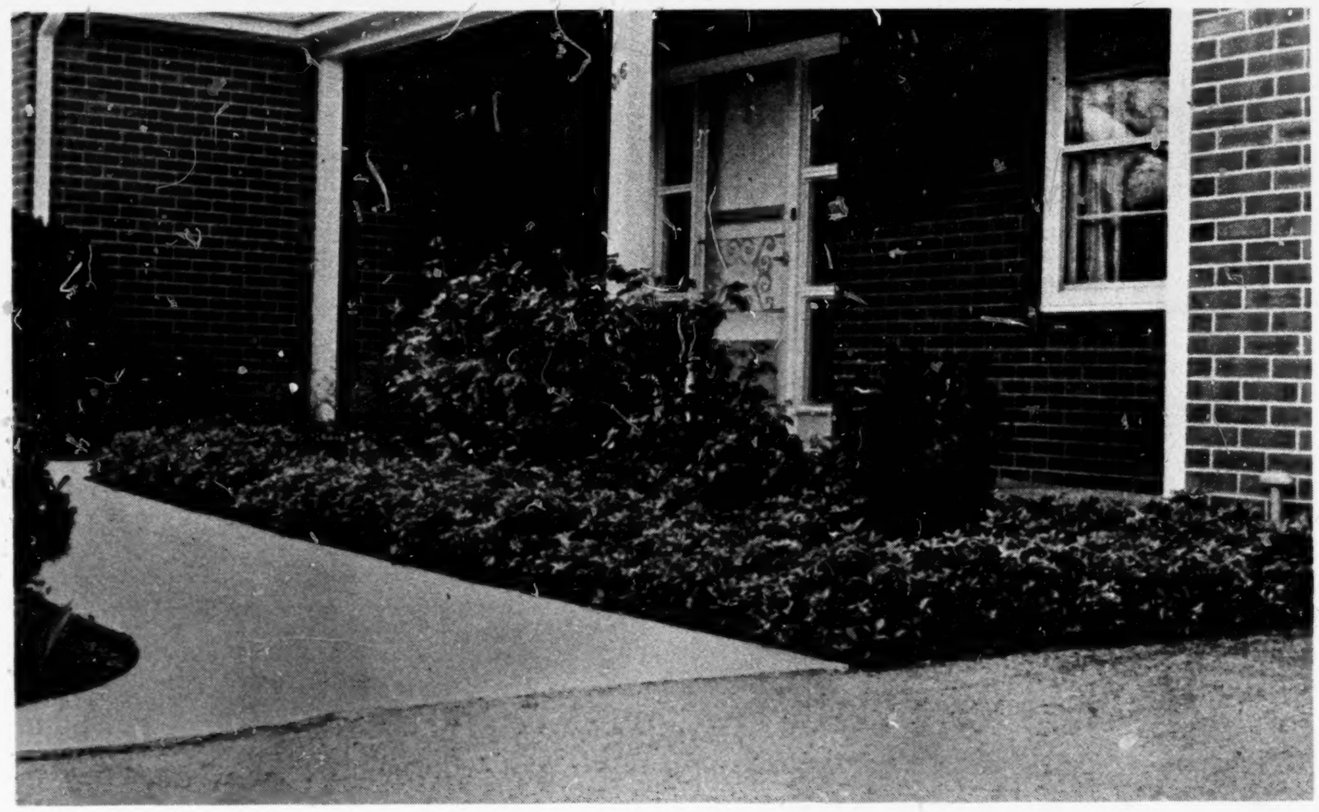


Figure 35. Walks should be smooth and at least four feet wide.

Driveways - Driveways must be carefully planned to accomodate family vehicles and vehicles which service the home. The number of family vehicles, the space needed for off-street parking and turn-arounds, and the garage location influence driveway design and positioning. A minimum width of 10 to 12 feet is necessary for driveways used for only one auto. To allow room for passing a parked vehicle, the minimum width of the driveway should be 18 feet. Rather than designing the whole driveway to allow for passing a parked automobile the designer may develop a parking area adjacent to one section of the driveway. The parking area also can be used for turn-around space. See Budget Landscaping, p. 52, Reference No. 6, for details. Turning a car around on the lot eliminates the dangerous practice of backing into busy streets. Paved parking bays are usually more practical than circular driveways. Circular drives do have the advantage of reducing the need for large wide masses of paving in one area. However, in planning them, one should keep in mind that the outside wheels of a car in a tight turn trace a circle about 60 feet in diameter.

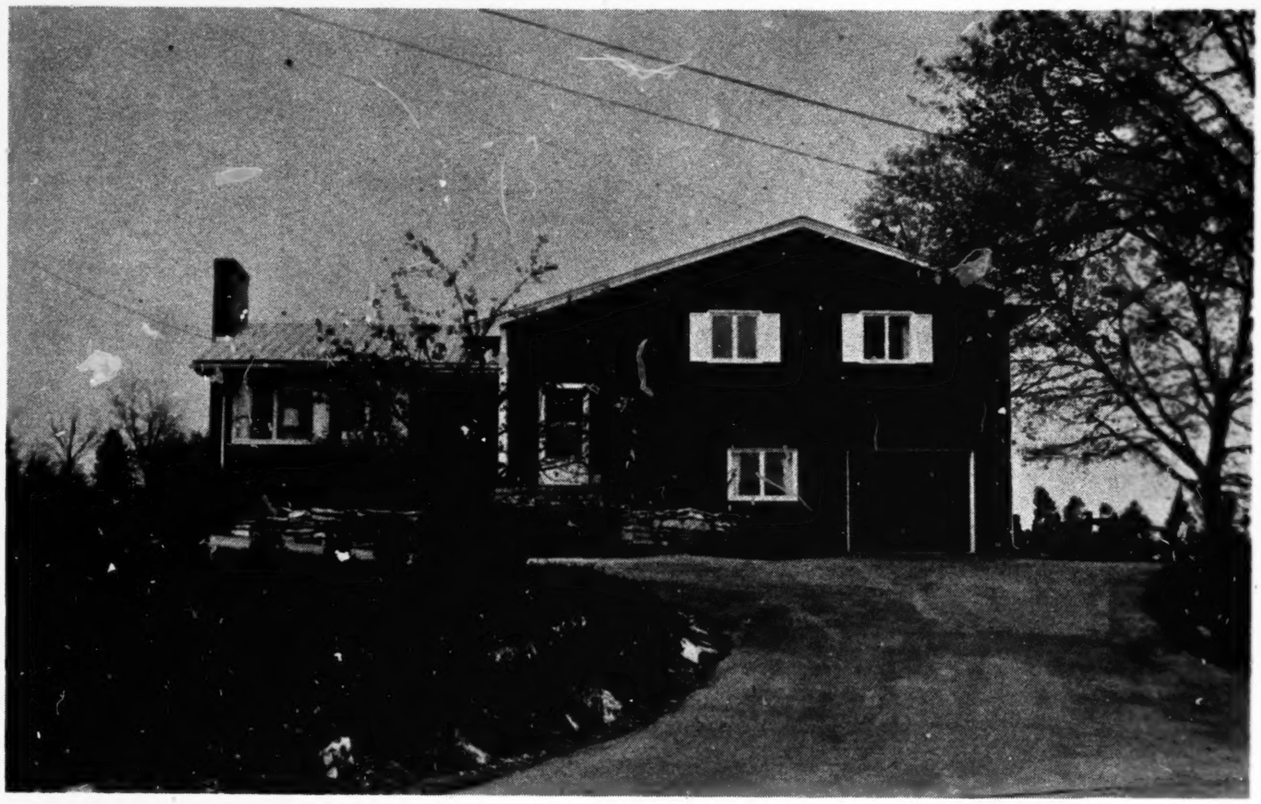


Figure 36. An aspahlt driveway also serves as the walk to the house.

Driveways can be surfaced with either loose aggregate or with hard surfacing like asphalt and concrete. Surfacing with loose aggregate costs less initially, but lacks durability. It is not suited for mechanical snow removal and it scatters on the lawn. It also may be uncomfortable for walking. Materials such as asphalt and concrete are more expensive but have greater durability, lower maintenance, and an evener surface. Concrete can present a somewhat cold, harsh, and glaring appearance unless it is finished with a roughened surface.

Curbs along a driveway help to control drainage. This may be especially important in winter when salt is used on the driveway. Concrete, stone, or steel curbine are more durable than asphalt or brick. The driveway should not be lines with pointed stones, bricks, or other hazardous ornaments.

Steps - Steps may be used where the elevation on the site changes abruptly. Steps may be used without walks if traffic is light enough so paths will not be worn in the lawn. When the walks are combined with steps, the steps should be at least as wide as the walk. Steps with landings and changes in direction are more attractive and easier to use than long flights of steps. Ramps or a few steps placed several feet apart can be used on very gradual slopes. Design and place steps so that they are convenient and safe for the users and in harmony with their surroundings. Well designed steps should be inviting to the person viewing them. This is especially true for the private area and for natural settings.

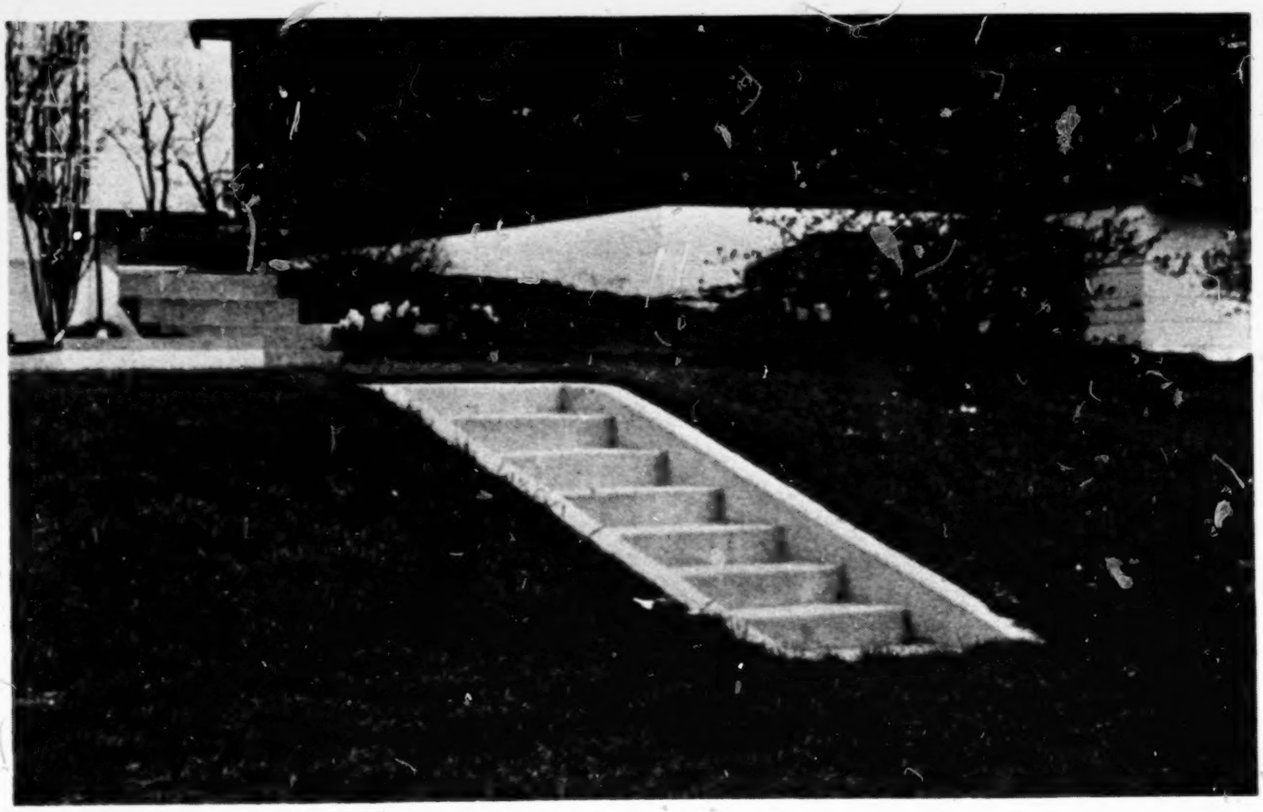


Figure 37. Steps should be set into a bank.

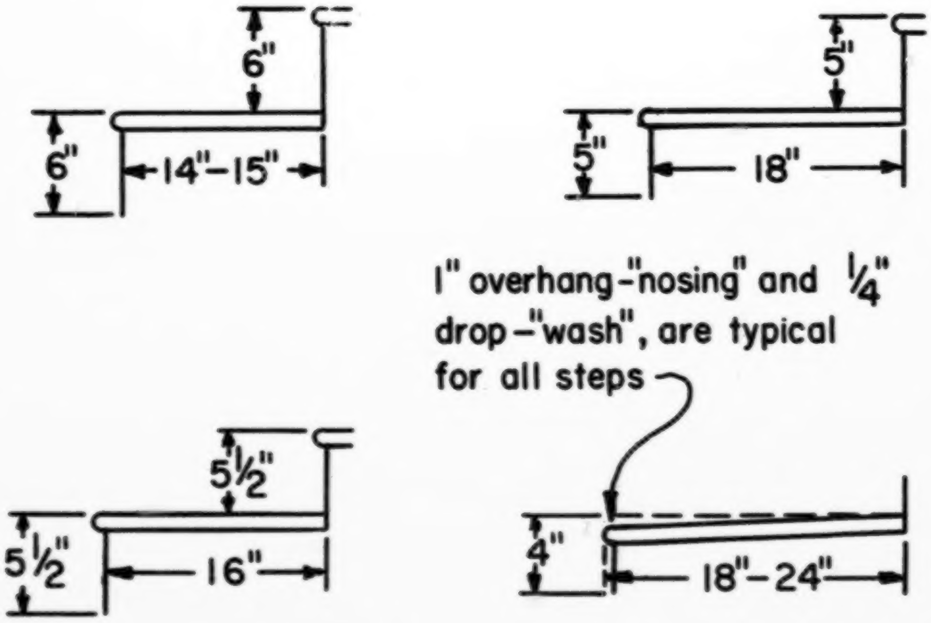

6"
6"
14"-15"
5"
5"
18"
1" overhang-"nosing" and 1/4" drop-"wash", are typical for all steps
5½"
5½"
16"
4"
18"-24"

Figure 38. Safe step designs.

To design steps properly, determine the rise needed and the horizontal distance to be traveled. The number of steps needed can then be readily determined by dividing the height of the bank by the height or rise desired for each step. The tread width can be determined by dividing the number of steps into the horizontal distance to be traveled. The height of the step over the width of the step is called the riser-tread ratio. Not all riser-tread ratios fit a natural pace, and some may cause people to fall. A maximum rise for outdoor use is 6 inches and a minimum tread width is 12 inches. Where children use steps more than adults, the riser should not exceed 5 1/2 inches. A good rule of thumb for determining the tread width is that the sum of the height of two risers and the width of one tread should equal 27 inches. Filling or cutting into the bank allows for some flexibility in establishing the riser-tread ratios.

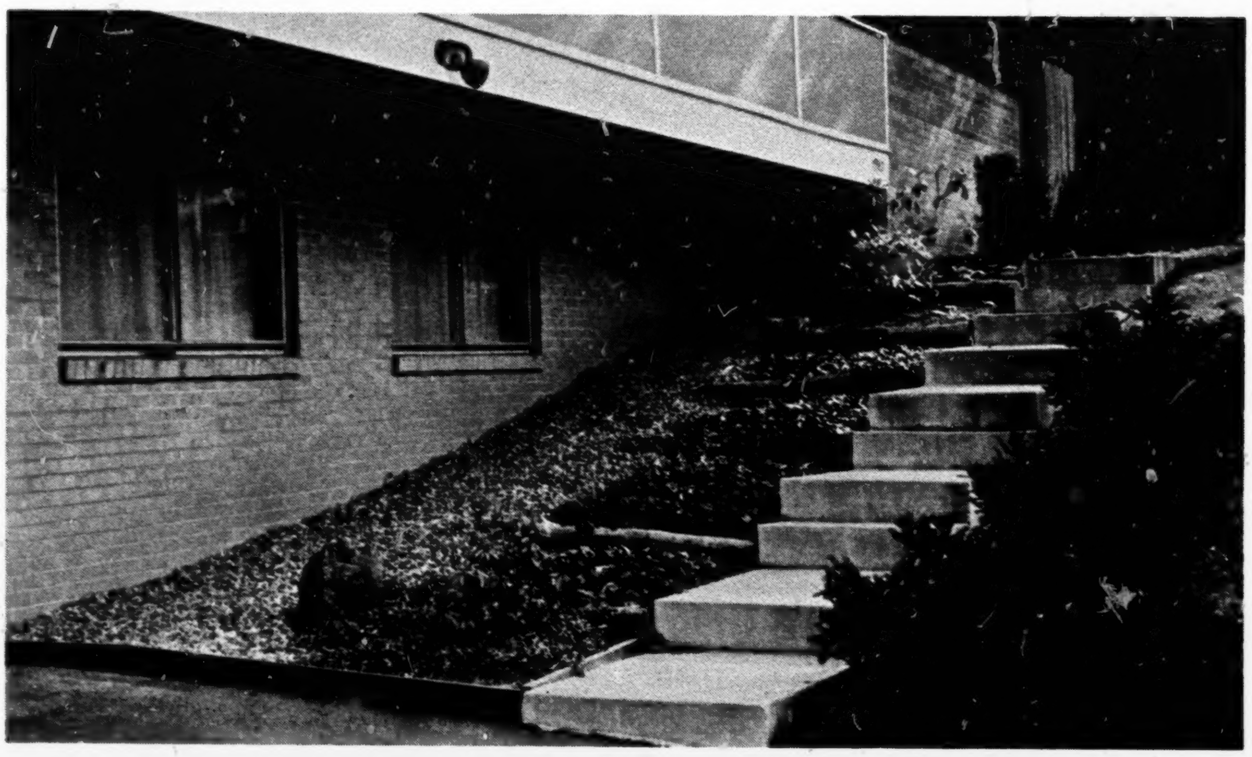


Figure 39. Steps alternated with landings for easy climbing.

Common materials for step construction include stone, flagstone, concrete, brick, and wood. Frequently, two materials such as wooden risers and brick treads are combined to give a pleasing effect. Large flat stones can be set without mortar when only a few steps are planned. Steps made from brick or small stones must be laid with mortar. Steps should be built into a slope. Avoid setting steps higher than ground level.

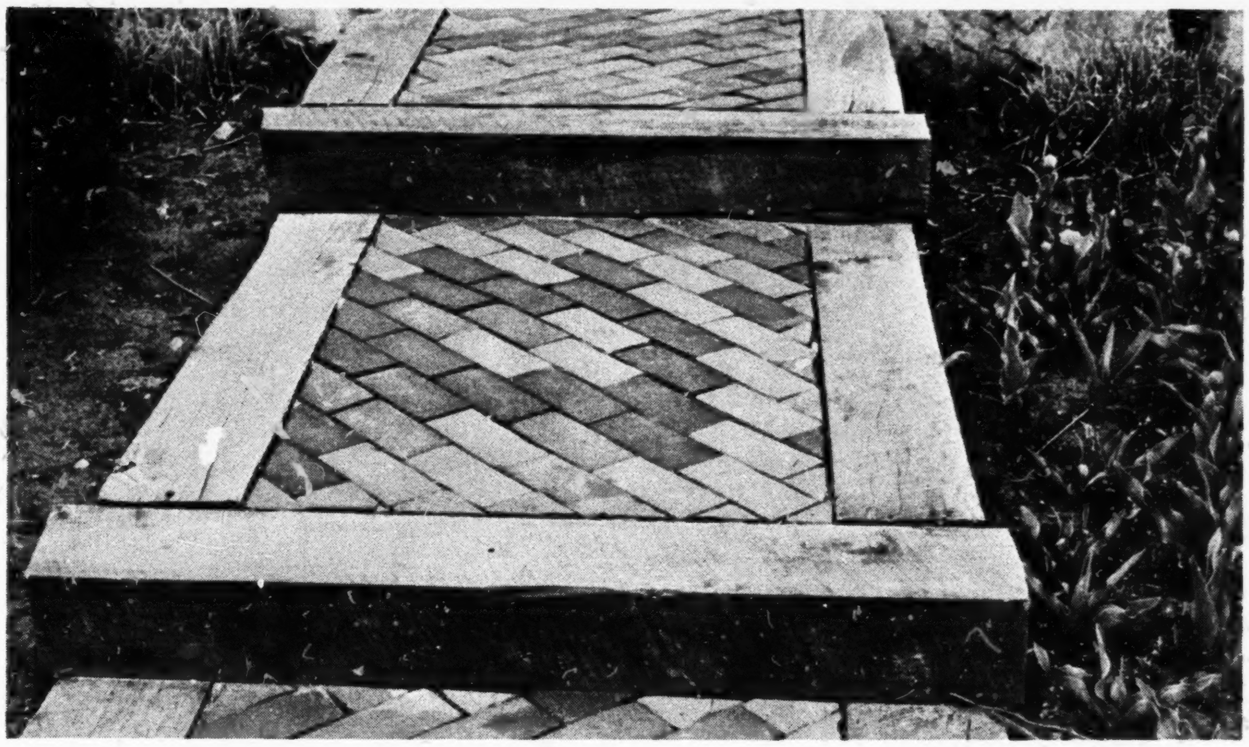


Figure 40. Railroad ties and diagonally laid bricks make attractive ramped steps.

Retention Structures

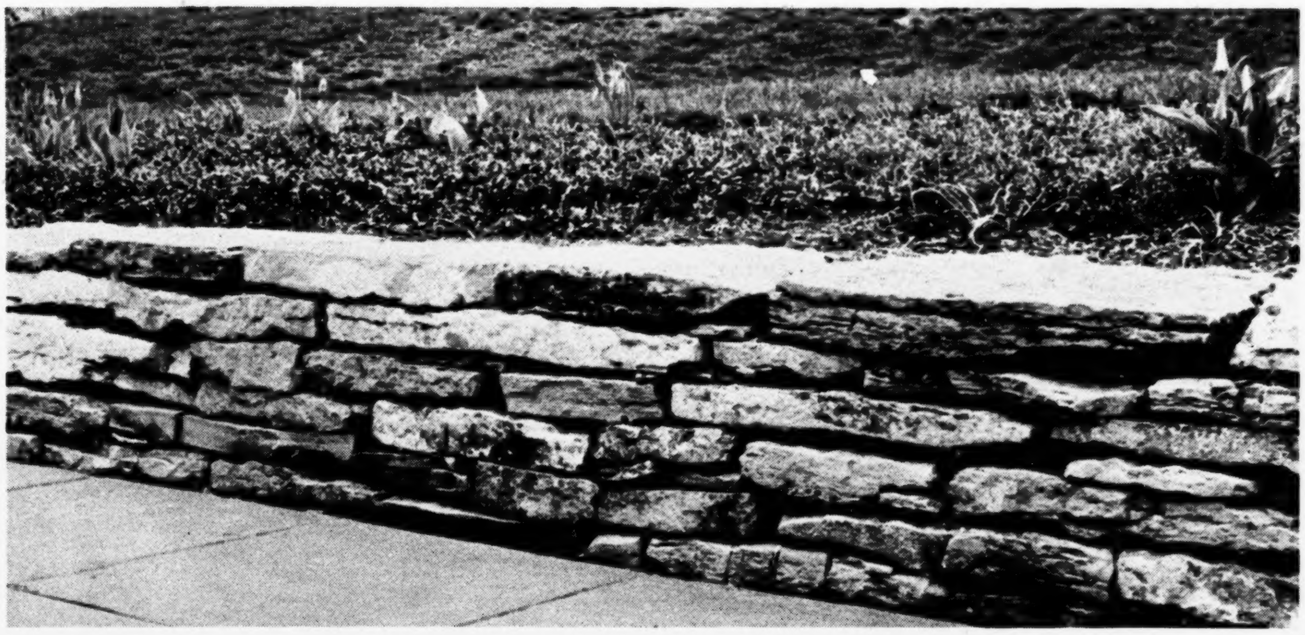


Figure 41. A dry wall is attractive, inexpensive, and easity constructed.

Retention structures are used to hold back soil where slopes are too steep for plantings to be used for erosion control, or where plantings may be undesirable for some reason. Walls may be constructed without mortar (dry walls) or they may be built with mortar or concrete (masonry walls). Dry walls may be constructed from fieldstone, rectangular or flat quarried stone, or railroad ties. Stones used in the walls should be large and heavy enough to anchor the wall to withstand pressure. The heavier stones are used at the base. Dry walls more than five feet high cannot withstand the pressures that develop behind them and will eventually collapse. The construction of a dry wall is shown in Figure 42.

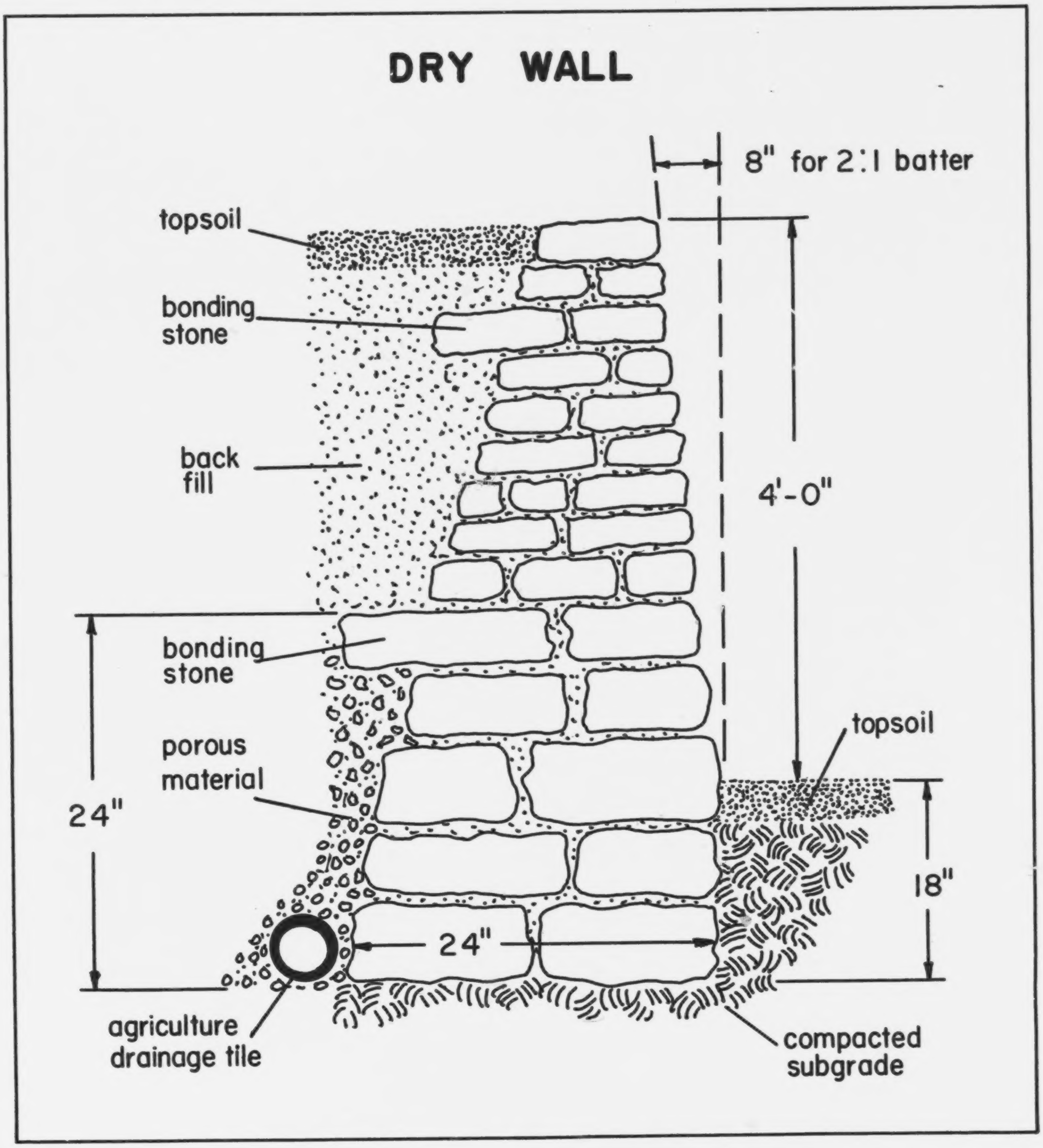

DRY WALL
8" for 2:1 batter
topsoil
bonding stone
back fill
4'-0"
bonding stone
porous material
24"
topsoil
18"
24"
agriculture drainage tile
compacted subgrade

Figure 42. The base of a dry wall should be half as wide as the height of the wall; stones should slant slightly toward the rear; water must be drained from behind the wall.

Fences and Walls

Wide selections of fence designs and materials are available to satisfy most landscape needs. Obviously, landscape needs will influence the style of fence selected by the designer. "Open" fences may be used to divide properties without creating a "closed-in" feeling. "Solid" fences provide privacy and screening. Durable fence designs and materials which require a minimum of maintenance should be selected. Fences are especially useful when space is limited and privacy or division is desired. Fences provide more immediate screening than plants. Branches of plants growing on painted or stained fences will have to be removed and repositioned every 2 to 4 years to allow repainting. Upright supports are usually spaced at 8 foot intervals. They should extend below the frost line and should be anchored with concrete collars to prevent frost action from pushing them out of line.

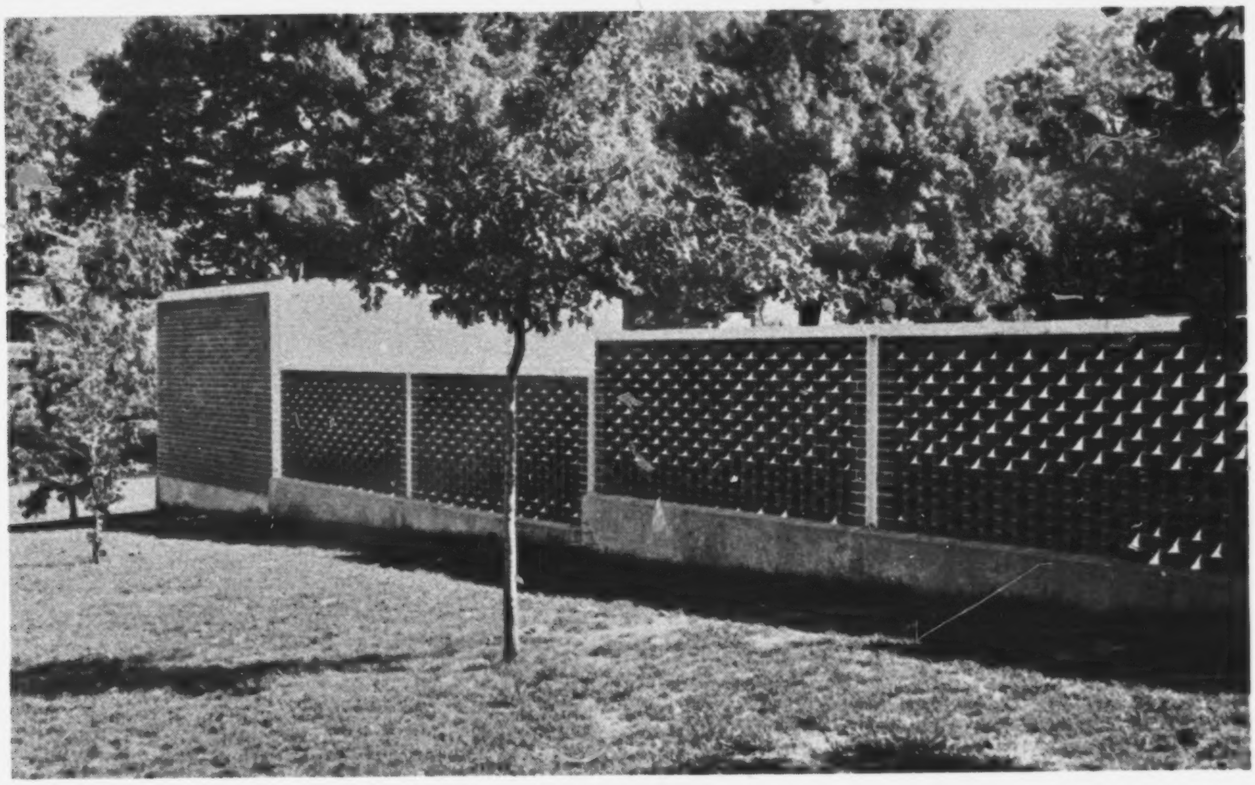


Figure 43. An openwork brick wall is durable and attractive.

Walls may also be used for division and screening, but they cost more than most fences and require masonry skills. Well constructed footings are essential. Low walls may be used to divide areas on the site and to regulate pedestrian traffic without impairing views or creating a "closed-in" feeling.

Paved Terraces

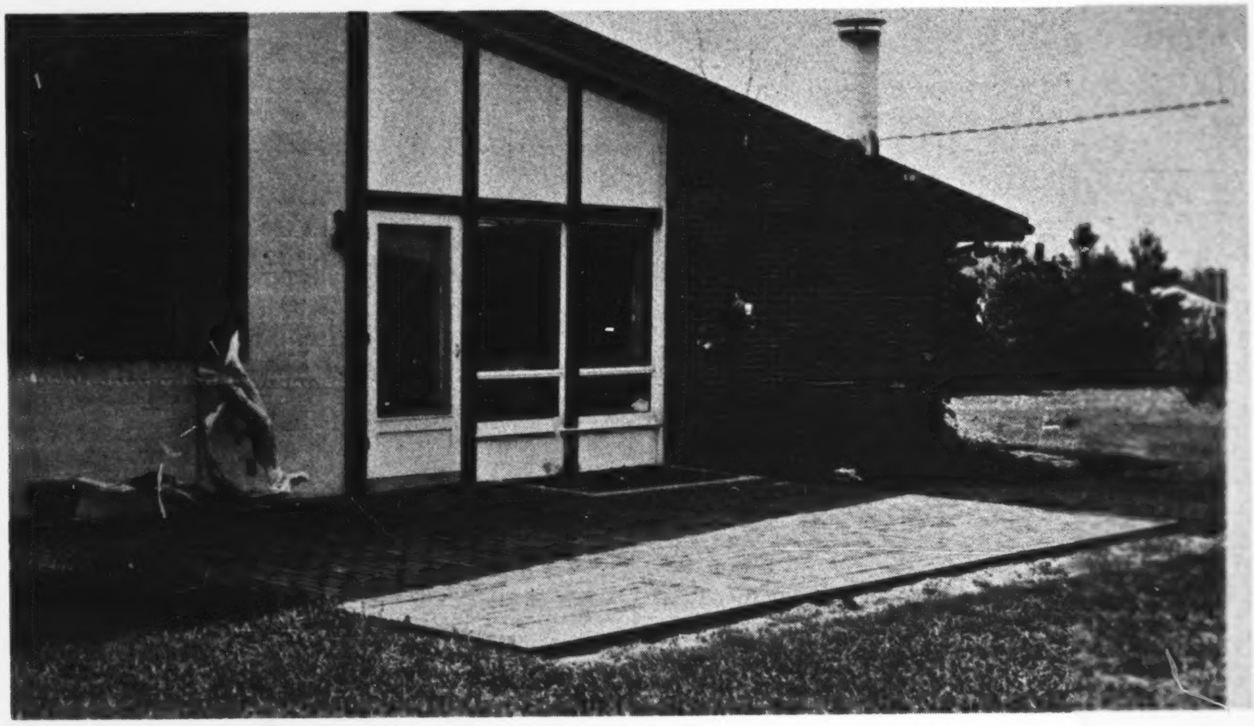


Figure 44. Bricks laid on a two-inch, tamped, sand base make an attractive terrace.

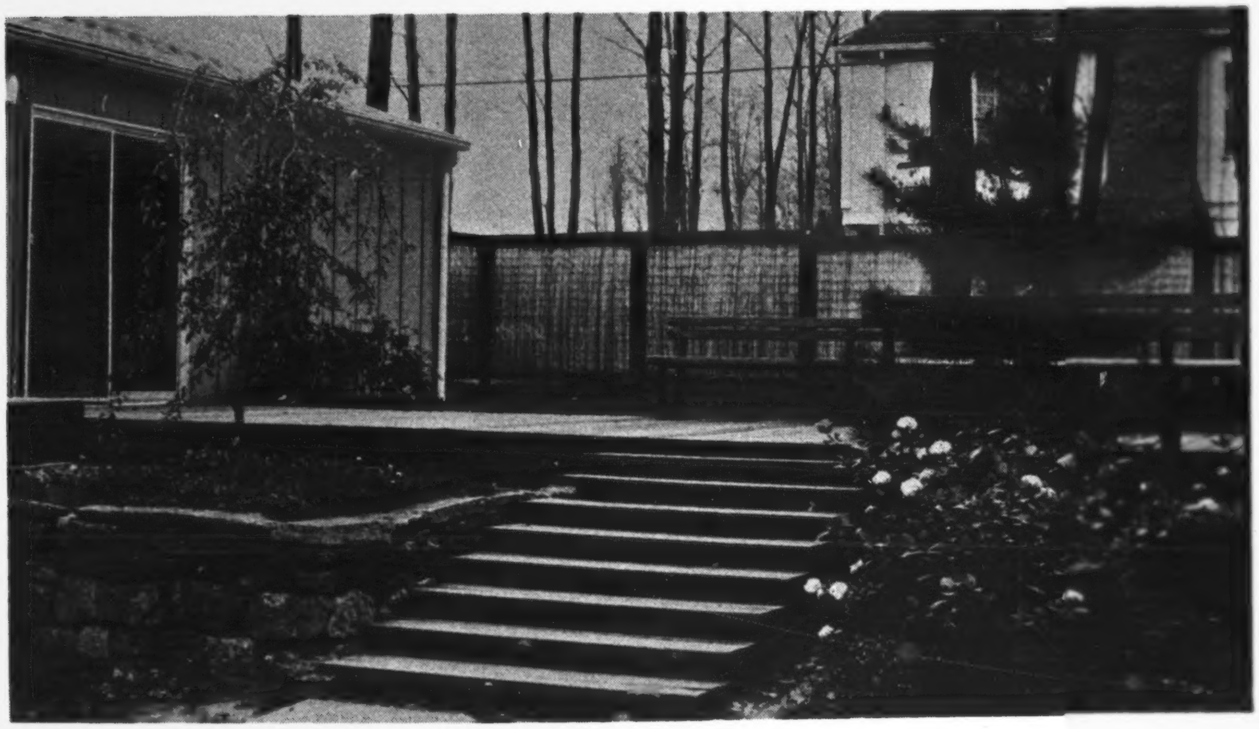


Figure 45. Outdoor steps should have broad treads and shallow risers.

The design and size of the terrace (patio) will depend upon the use for which it is intended. A good rule of thumb is that a paved terrace should have the same square footage as the adjoining room. A terrace may be shaped either formally or informally and is usually hard surfaced. One should select paving materials that do not glare or absorb heat and that have level surfaces that do not become slippery when wet. Commonly used materials are concrete, bricks, stones, and "patio" tiles. Combinations of materials or the use of one material to form different patterns in a paved terrace is especially pleasing.

Pools and Fountains

Small pools and fountains add charm and beauty to private areas. The sound of moving water is soothing and relaxing. Pools may be plastic, steel, or free-form masonry. Plastic and steel pools are sold commercially and free-form masonry pools can be constructed with basic masonry skills. Pools should be 18 to 24 inches deep to allow sufficient depth for water lilies and to overcome shallow-water algae accumulation. Masonry pools must receive special care to avoid cracking due to ice pressure during the winter months. Submergible electric pumps for fountains and artificial waterfalls recirculate the water in the pool and allow the water to remain at a constant temperature for fish and plants.

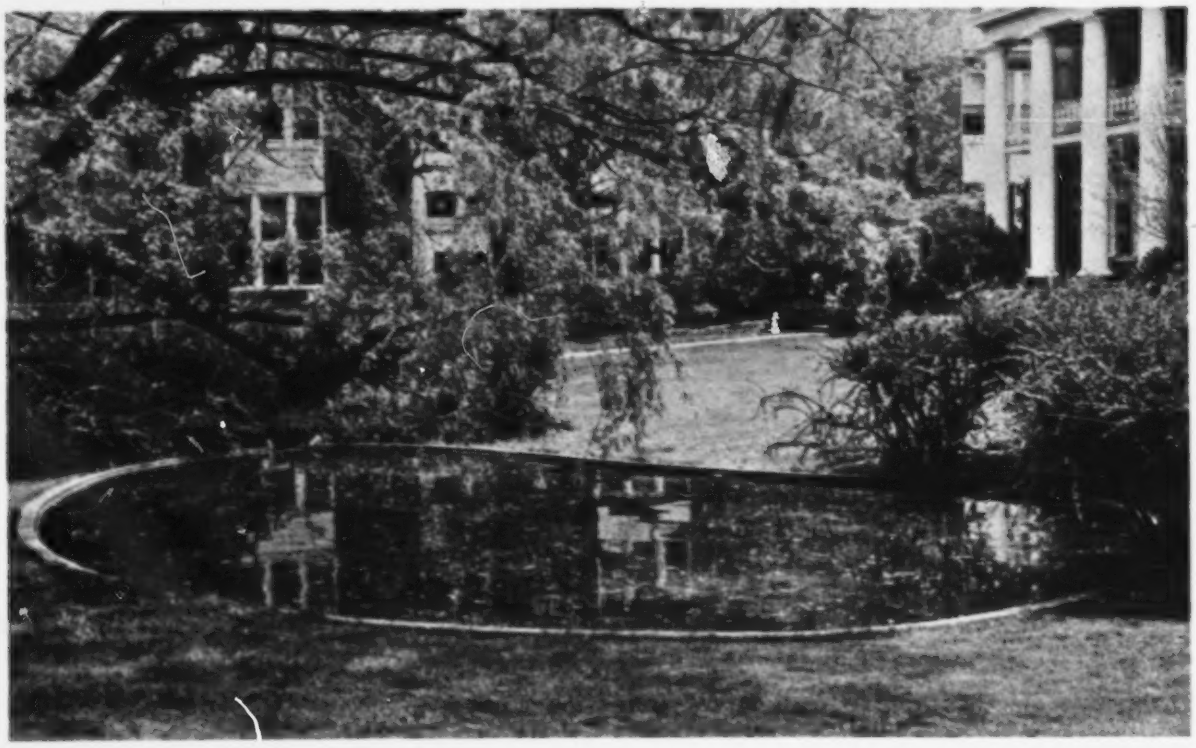


Figure 46. A free-form concrete garden pool beautifies a landscape.

Swimming pools have special detailed structural requirements that should be planned by a pool construction firm. Generally a swimming pool on residential property should not be less than 25 feet in length, nor less than 15 feet in width. A diving board requires a water depth of 9 feet. A paved area at least 12 feet wide should surround the pool to prevent grass clippings and leaves from fouling the water. Safety dictates that the deep end be toward the direction from which youngsters are most likely to approach the pool. Local ordinances require a fence and sometimes a pool cover. Chlorination, heating, filtering, and other maintenance costs may be about $50.00 per month. Swimming Pools by Sunset gives additional information of this subject.

Miscellaneous Structures

Overhead trellises, large plant containers, garden seats, planting beds in paved areas, and private area embellishments such as sculptures, lights, and birdbaths are examples of miscellaneous structures. These items are usually found in the private area. Selection must be guided by needs and good taste. These items can add usefulness, individuality, and distinction to landscapes. Recreational structures such as a basketball court, horseshoe pits, and volleyball or badminton standards may also be included in appropriate parts of the private or service area. Service area structures such as clothes line supports, compost bins, tool sheds, and dog houses are additional miscellaneous structures.

The Sunset Book Series - Children's Rooms and Play Yards, Decks for Outdoor Living, Garden Pools, Fountains, and Waterfalls, Garden Work Centers, How to Build Fences and Gates, How to Build Patio Roofs, The Patio Book, Walks, Walls, and Patio Floors, Gardening in Containers, and Garden Art and Decoration - give many useful ideas and directions on construction. (See Reference No. 48)

Structural Materials

Asphalt

Asphalt is used for hard surfacing walks, drives, terraces, small storage platforms, and other areas. It is long lasting, durable, inexpensive, easy to work with, and can be painted. Depressions and cracks may develop unless the asphalt is placed on a good base. Asphalt will soften in hot weather and may be marked by bicycle stands, lawn furniture, etc. Wood or other edging materials may be needed to prevent the edges of the asphalt from crumbling. Asphalt can be damaged by leaking oil and gasoline. Large asphalt areas may appear drab.

Concrete

Concrete may be used in the same manner as asphalt. In addition, stairs and walls can be constructed from concrete. Concrete is more durable and more expensive than asphalt. It is easy to apply and may be handled in small amounts. It must be laid on a good foundation. Cracks are difficult to repair. Concrete surfaces may appear to be somewhat "cold" or "harsh" but this can be remedied by a wide variety of attractive finishes and color options. It combines well with brick and wood.

Brick

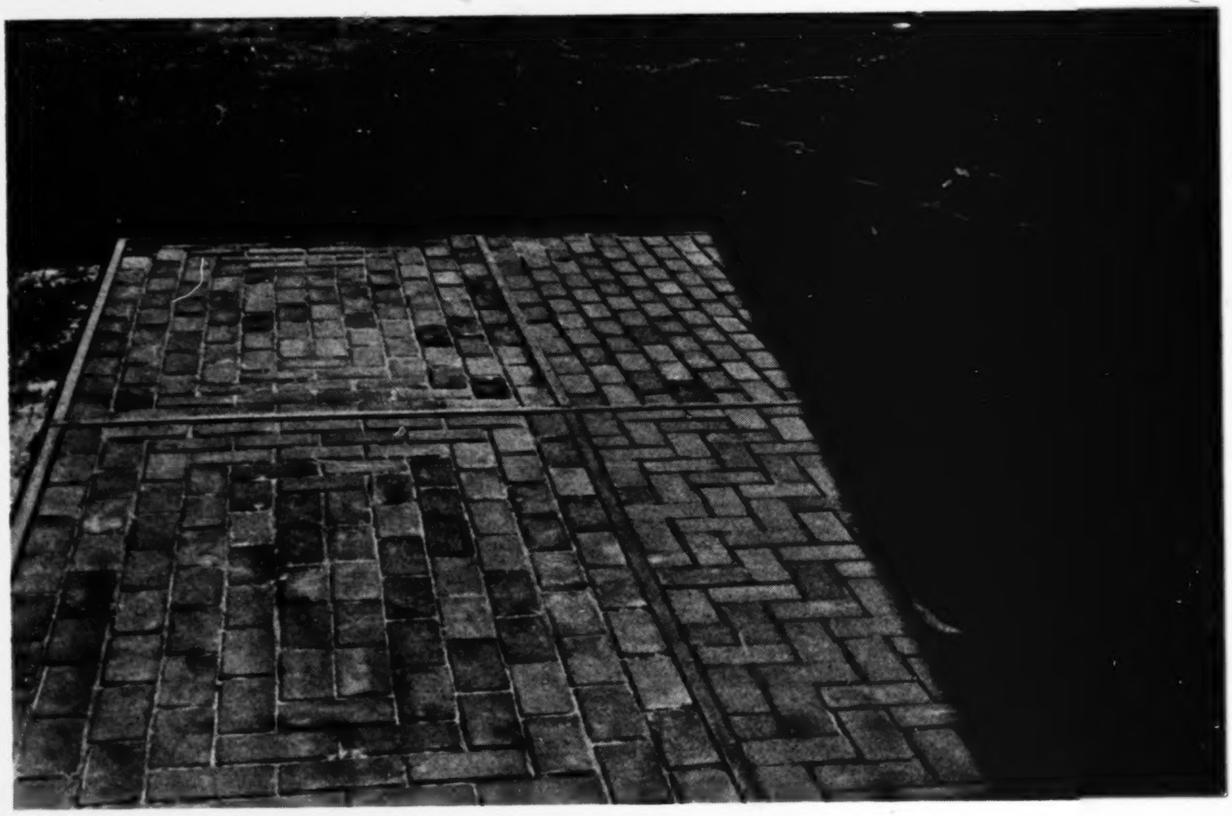


Figure 47. Bricks may be laid in many patterns.

Brick is used for walks, stairs, and patio construction. It is "warm" looking, easy to work with, long lasting, may be laid in several patterns, and combines well with other materials. Bricks can be laid on a two-inch cushion of sand supported by a firm base. Joints between bricks on a terrace may be filled with sand or mortar. Brick is subject to cracking and heaving in cold weather. Heaving will not be a problem if the base is well drained. While small, weeds between the joints in brick may be easily removed by hand. The dimensions of common brick are 8 inches by 3 7/8 inches by 2 1/2 inches. Face brick is 8 1/4 inches by 4 inches by 2 1/4 inches. Rough surfaced bricks should be used to avoid a slippery surface.

Flagstones

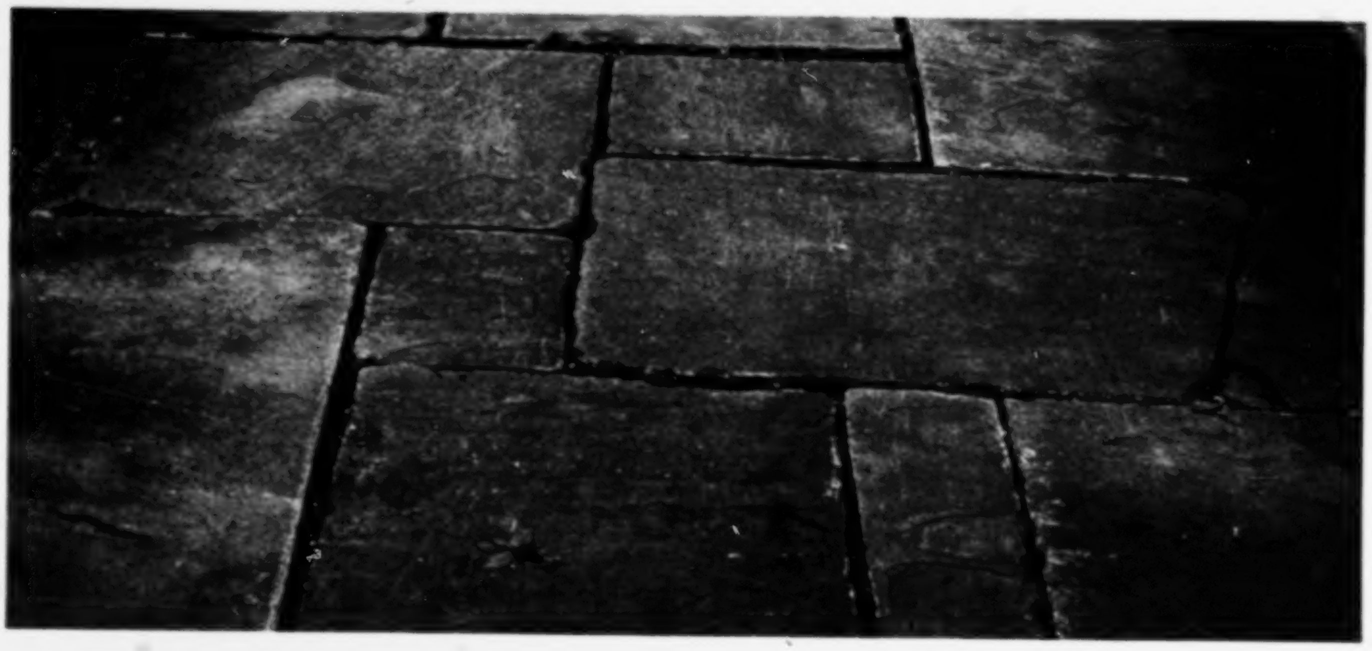


Figure 48. Flagstones may be laid on a cushion of sand.

Flagstones are used for walks, patios, stairs, and stepping stones. They may be laid on a cushion of sand which is supported by base material. Joints between the flagstones may be filled with a mortar mix or a soil mixture. Flagstone is durable, but it is also expensive. It is available in different colors and in both geometric and irregular shapes. Cut flagstones may be very slippery when wet.

Loose Aggregates

Loose aggregates such as crushed stone, limestone chips, or pea gravel are inexpensive and easily applied as surfacing for drives, walks, and patios. Additional applications of loose aggregates must be made occasionally. Walking is difficult on loose aggregates, and when power equipment is operated, they tend to scatter over lawns and create a hazard. Curbing will help prevent scattering. Loose aggregates are varied in color and texture.

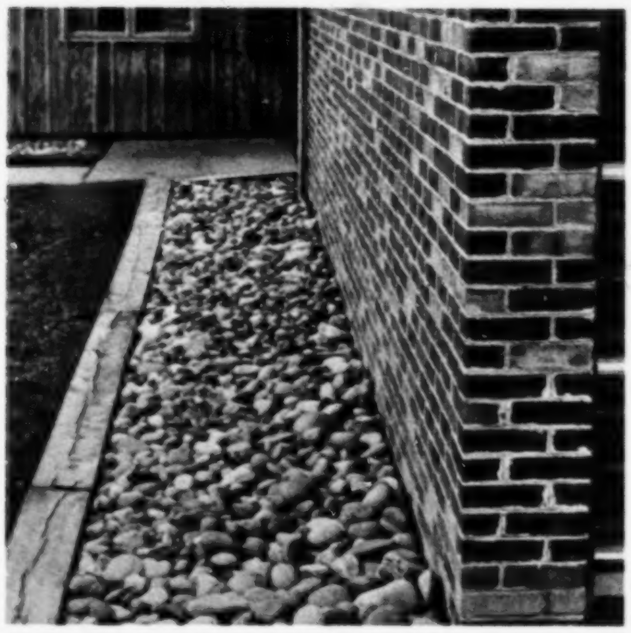


Figure 49. Loose stones fill a space kept dry by the roof overhang.

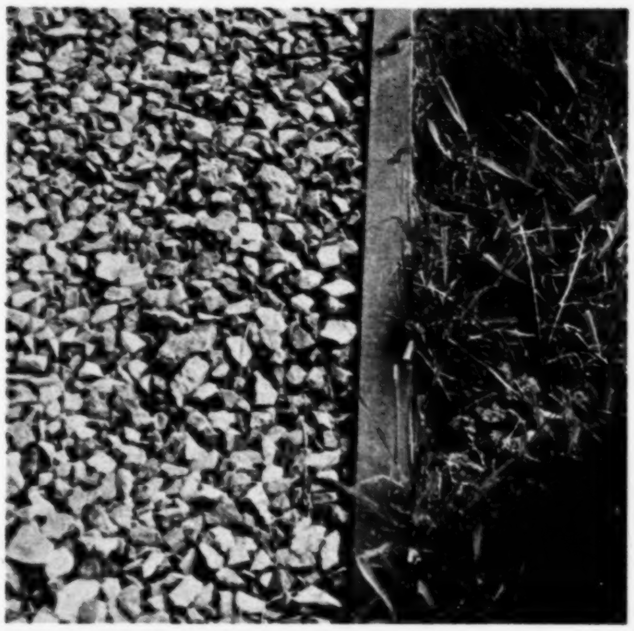


Figure 50. Crushed rock is an inexpensive paving material for low-traffic paved areas.

Wood

Wood is used for stairs, deck patios, dividers, and fencing. Most wood must be treated with a preservative; cypress, redwood, and cedar are exceptions. Wood blocks and wood dividers can be used for patios. Railroad ties can be used for soil retention. Many types of wooden fences are available. Wood may be painted or used naturally depending on color and durability of the wood. Wood is reasonable in cost compared to other construction materials.

Tanbark

Tanbark is a loose, soft, oak-chip by-product of leather tanning. It is useful for natural looking walks. Tanbark is not durable and it requires frequent additions in heavily traveled areas. Wood chips, licorice roots, and other organic materials may be substituted for tanbark.

Large Stones

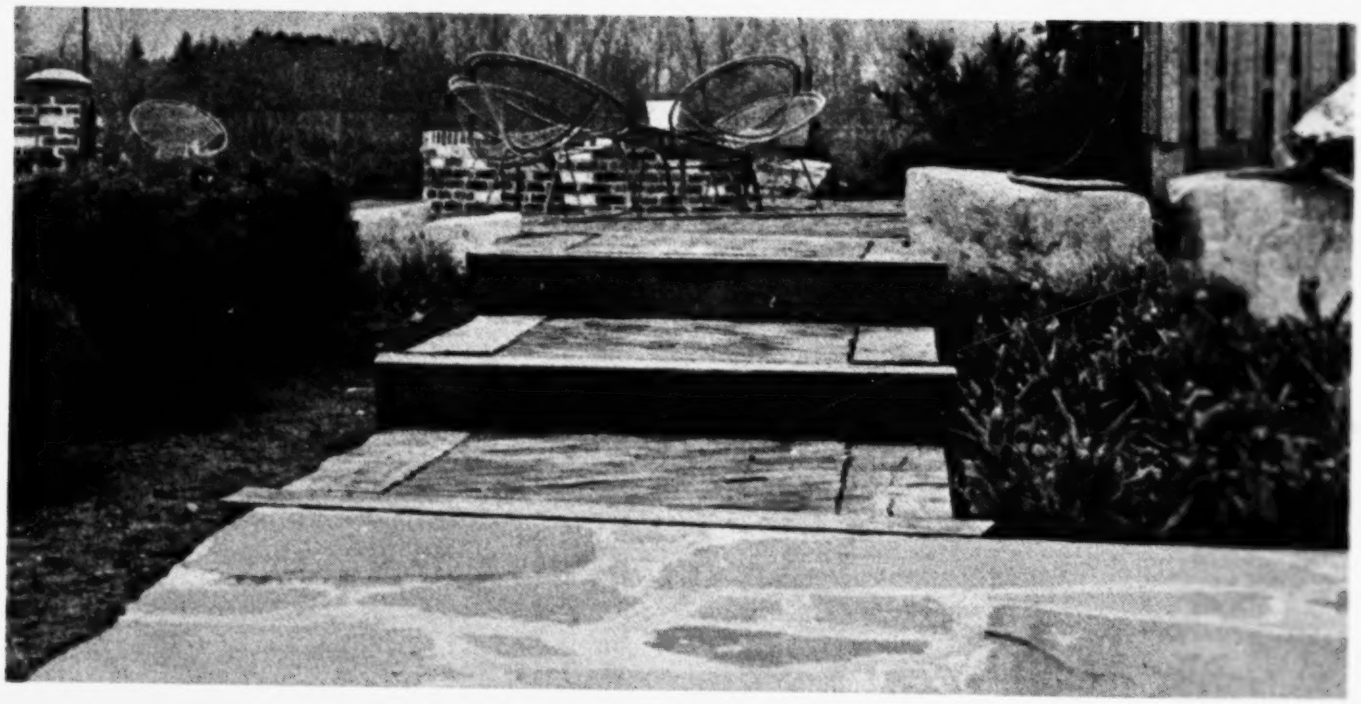


Figure 51. Large stones skillfully used give character to the landscape.

Large stones are useful for wall and step construction, especially in naturalized settings. Stones may be laid dry or with mortar. They are available as fieldstone or quarried. Masonry structures are relatively expensive.

Metal Fencing

Metal fencing is available in a wide range of types and prices. It is useful for regulating traffic and for controlling animals, but has only limited screening value.

Coping

Coping is steel used as edging along walks, drives, or wherever a strong, long lasting, permanent edging is desired. It is, however, much more costly than wood that has been treated to resist decay.

Garden Lighting

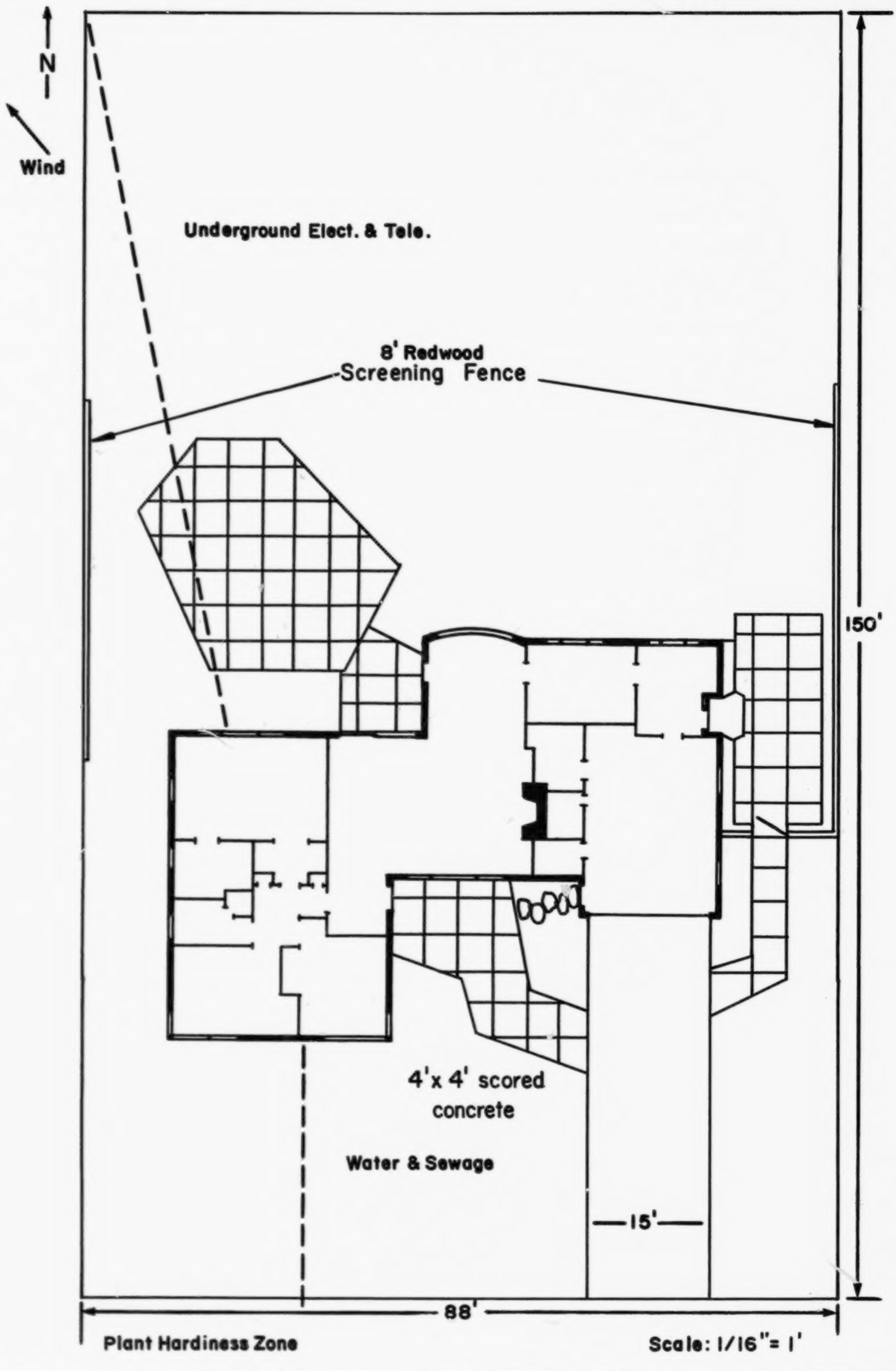
Lighting of driveways, walks, and steps is essential for safety. Lighting of terraces and play areas makes them usable after dark. Special decorative lighting effects can enhance the beauty of the landscape. For detailed information on this subject see Outdoor Lighting for Your Home, Reference No. 39.

The Structural Plan

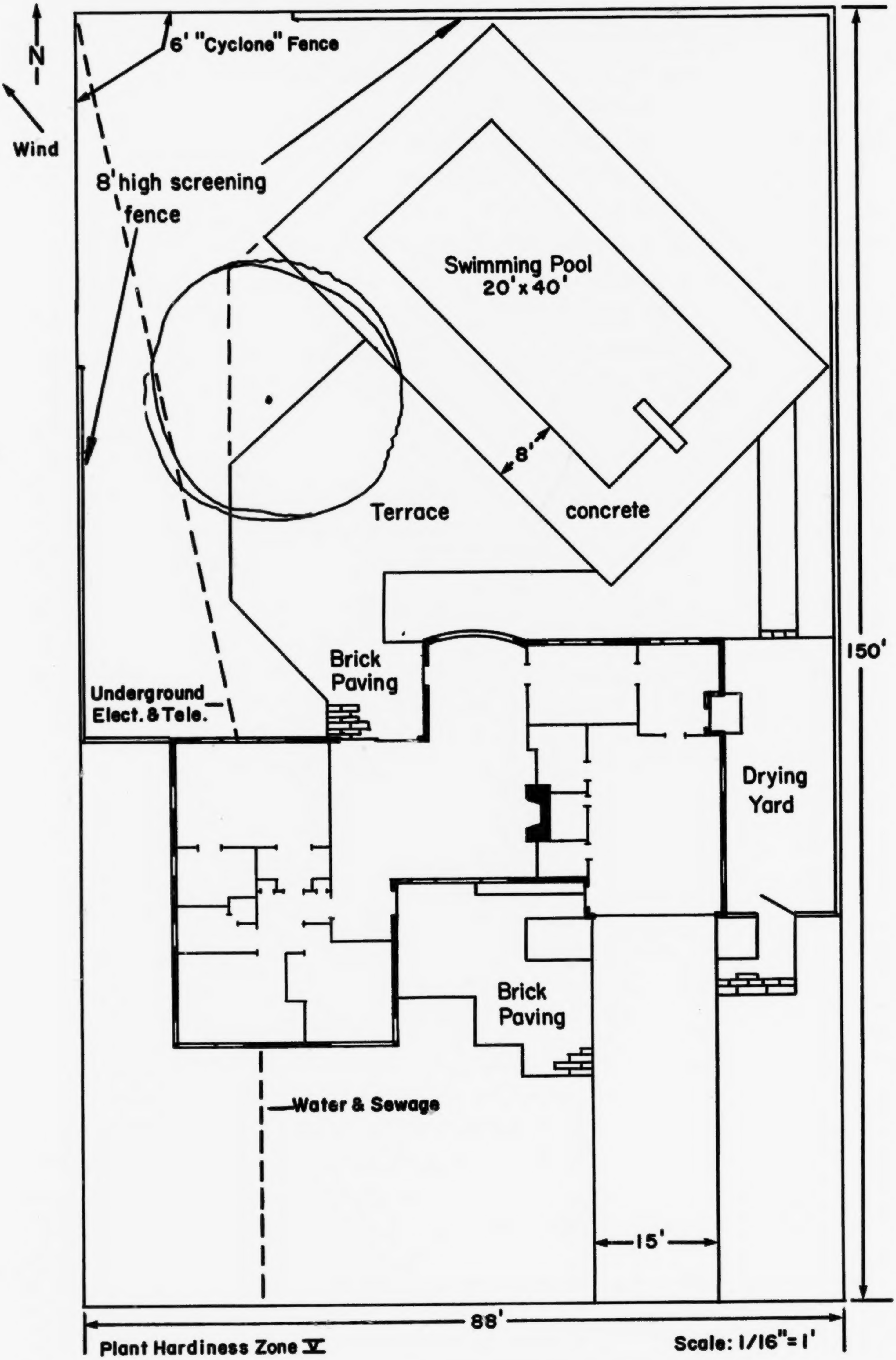
At this point you have done enough exploring of landscape ideas. You have become sufficiently familiar with landscaping structures to make a Structural Plan. Use the drawing equipment assembled earlier and make a Structural Plan. Base it on your earlier plans. Also make several alternate Structural Plans. From these pick our the out that seems best and use it later to develop the Planting Plan. The Finished Landscape Design will then be made from the Planting Plan.

Examples of Structural Plans are shown on the next several pages.

Structural Plan


N
Wind
Underground Elect. & Tele.
8' Redwood
Screening Fence
150'
4'x 4' scored
concrete
Water & Sewage
15'
88'
Plant Hardiness Zone
Scale: 1/16"= 1'

Alternate Structural Plan


N
Wind
6' "Cyclone" Fence
8' high screening fence
Swimming Pool 20'x40'
8'
Terrace
concrete
Brick Paving
Underground Elect. & Tele.
Drying Yard
Brick Paving
Water & Sewage
15'
150'
88'
Plant Hardiness Zone V
Scale: 1/16"=1'

The Kinds of Plants

Selecting the most suitable plant materials for a particular location requires great knowledge about plant species and their characteristics. Plant materials should be selected which are well suited to the needs of the site. Tables giving the names and characteristics of recommended plant materials are listed in Appendix A. See the following references: The Art of Home Landscaping, Reference No. 49, pp. 221-246; The Shrub Identification Book, Reference No. 52; The Tree Identification Book, Reference No. 53; Trees for American Gardens, Reference No. 54; Ground Cover Plants, Reference No. 19; Pronouncing Dictionary of Plant Names, Reference No. 43; Shrubs and Vines for American Gardens, Reference No. 46.

When indicating plants in the landscape plan, determine the shape, mass, and size of the plant or plant groupings needed for each area of the site. Decide whether an evergreen or a deciduous plant is appropriate. After the above decisions have been made, one may select the particular species and cultivar to be used. Answering the following questions will help in making the decision: Is the species hardy and adapted to environmental conditions? What are the maintenance requirements of the plant? Does the plant have the flowering, fruiting, foliage, and branching characteristics desired? Is the plant obtainable? Is it too costly to be used in large numbers?

It is important that you know both the technical and common names of plants used for landscape purposes, because wholesale price lists, and nearly all books on landscape plants have plants listed alphabetically according to the technical names. Sugar Maple, for example, is listed as Acer saccharinum. Designers specify plants in a design by technical names to avoid the confusion that could come from the use of common names. For example, Amalanchier canadensis is known as Serviceberry in one part of northeastern United States, as Shadblow in another, and as Juneberry in a third area.

Habit of Growth

Habit of growth refers to the size, form, and other growth characteristics of a plant. The habit of growth of a plant is an important guide for plant selection. Generally plants have vertical, horizontal, or rounded growth habits. Horizontal lines may be contrasted by plants with vertical or rounded habits of growth and complemented by plants with horizontal habits of growth. Plants for example may be sheared to establish horizontal lines.

Plant forms are creeping, spreading, pyramindal, columnar, upright, vase-shaped, rounded, and weeping. Low growing plants are frequently placed under windows, along walks, or where a need exists for plant material that will not block vision. They may also be used for groundcovers. Plants with vertical habits of growth may be used for screening, framing, shading, windbreaks, and steep planting.

Some plants have intermediate habits of growth. They are useful for plantings close to the house, for shrub borders, for plant screens and hedges, and for specimen plantings. The habit of growth of a plant may be such that it can be used for several purposes. Some evergreen species are used for windbreaks and for low growing hedges.

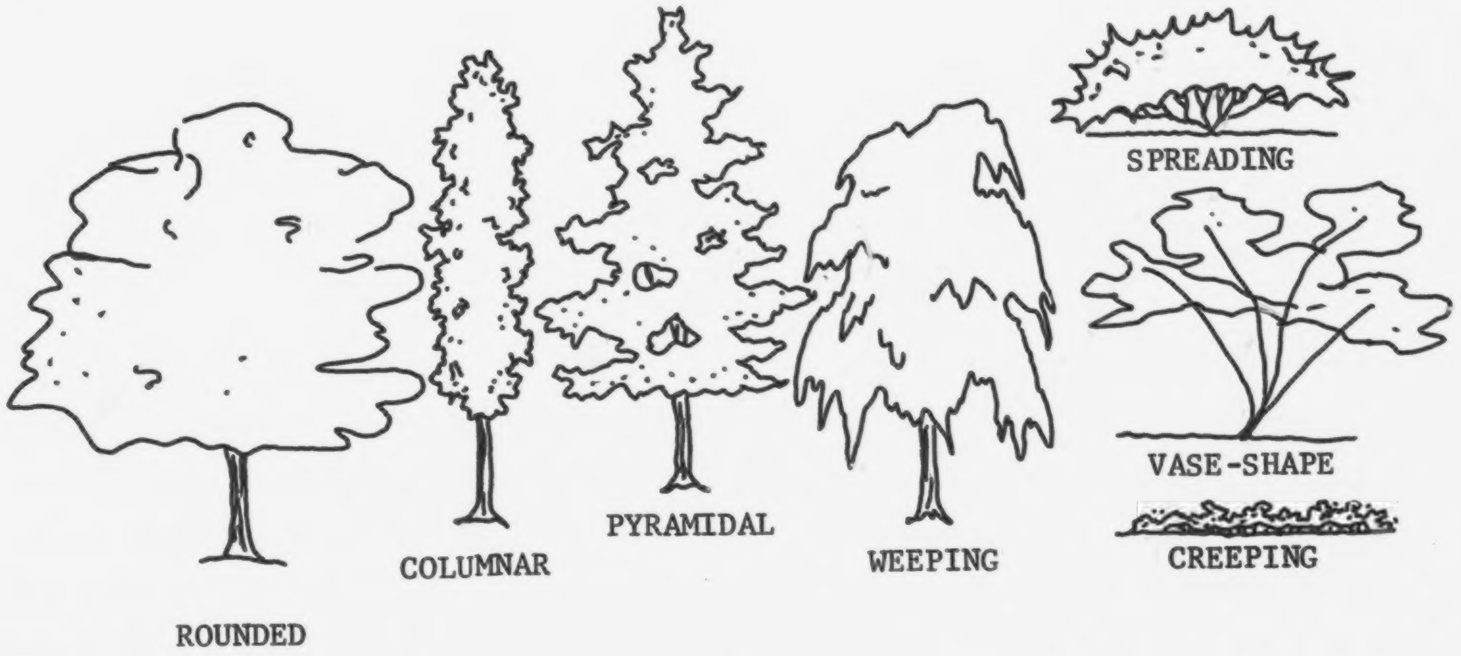


Figure 52. Tree and shrub forms.

When selecting a plant, always consider its mature height and shape. It is best to select plants that will mature at the height and shape desired. A landscaper should be able to see how selected plants will look in five, ten, or fifteen years. Plantings under windows or along the edges of drives and walks should have a mature height and width which will not obstruct vision or passage. Plants selected for framing and screening should have a mature height which is suitable for their planned use.

Hardiness

Make your selection of plants only from those which are hardy in your area. A map of the Hardiness Zones in the Northeast is given in Appendix A. Since the rainfall and relative humidity are similar throughout the Northeast, the hardiness of a particular species is determined primarily by its reaction to temperature. The degree of resistance to low winter temperature sets the northern limit for a species, while resistance to high summer temperature sets the southern limits.

The table of plant materials in the appendix includes the range of hardiness zones within which each plant will grow well. Several books and nursery catalogs give the hardiness zones for landscape plants. Sometimes a particularly desirable plant, such as a Kaempferi Azalea, may be grown successfully just outside the limits of its zone by planting it on the north side of a building to protect it from winter sunlight and in a position to protect it from strong winter winds. Such protection provides a micro-climate that is favorable for the particular plant. Certain plants require light shade no matter where they are planted. Others are particularly susceptible to drought-injury and must be watered in dry seasons. Resistance to drought and cold injury often increases as the plants become older. Boxwood is a good example of a plant in which this is true.

Maintenance

Maintenance requirements for a landscape design should be considered at the time of planning. Landscape maintenance includes watering, pruning, fertilizing, staking, spraying, clipping, weeding, and other duties. Maintenance requirements can be reduced by selecting plant materials which require little pruning and which are not highly susceptible to insects, disease, drought, and winter injury. Shrub plantings can be underplanted with groundcovers to simplify mowing. Semi-automatic watering devices can be installed. Low maintenance demands less of the owner's leisure time. You can review the problems of establishing and maintaining a landscape by reading Landscape Maintenance and Establishment, Department of Agricultural Education, The Pennsylvania State University.

Fruit, Flower, Foliage, and Branching Characteristics

The fruit, flower, foliage, and branching characteristics of plant materials in the landscape should blend into a harmonious relationship. It is usually better to plan a landscape with a few repeated colors or other characteristics. Plan to have a selection of plants which give the landscape a succession of color throughout the growing season.

Variety in the landscape may be obtained by varying the color, form, size, and texture. The most pleasing affects are obtained by having one form, color, size, or texture dominate. For example, if only one plant in a large planting is purple-leaved, while the others are mid-green, interest is created without destroying the unifying effect of the green color. But a planting of shrubs with equal proportions of red, blue, green, and yellow foliage would be distracting. Similarly, a few pyramidal plants in a planting dominated by rounded forms creates interest without destroying the rounded forms. Perhaps you can think of similar examples of size and texture. The use of color in landscaping is detailed in Garden Color, Reference No. 48.

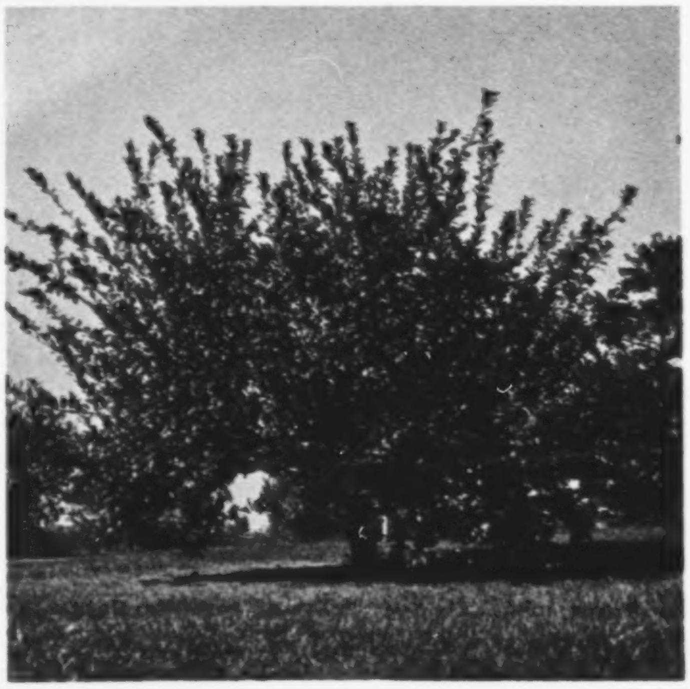


Figure 53. Specimen plants should be selected for outstanding form and/or color of flowers, fruit, or foliage.

Evergreen and Deciduous Plant Materials

Both evergreen and deciduous plants are used in the landscape. Frequently, either an evergreen or a deciduous plant would be suitable for a specific location in the landscape. Combinations of deciduous and evergreen plants increase interest and adds individuality to the landscape.

When combining these plant types, be especially careful to balance the masses and forms, and visualize the appearance in winter as well as summer.

The foliage of evergreen species can be enjoyed year-round. The colors range from green to gray to blue. The leaves of evergreens may be fine textured needles of hemlocks or somewhat coarse leaves of rhododendrons. Evergreens have many shapes. Those with low spreading forms and those with upright conical forms are frequently used. Evergreens are especially useful for windbreaks or screens in situations requiring nearly opaque material the year round.

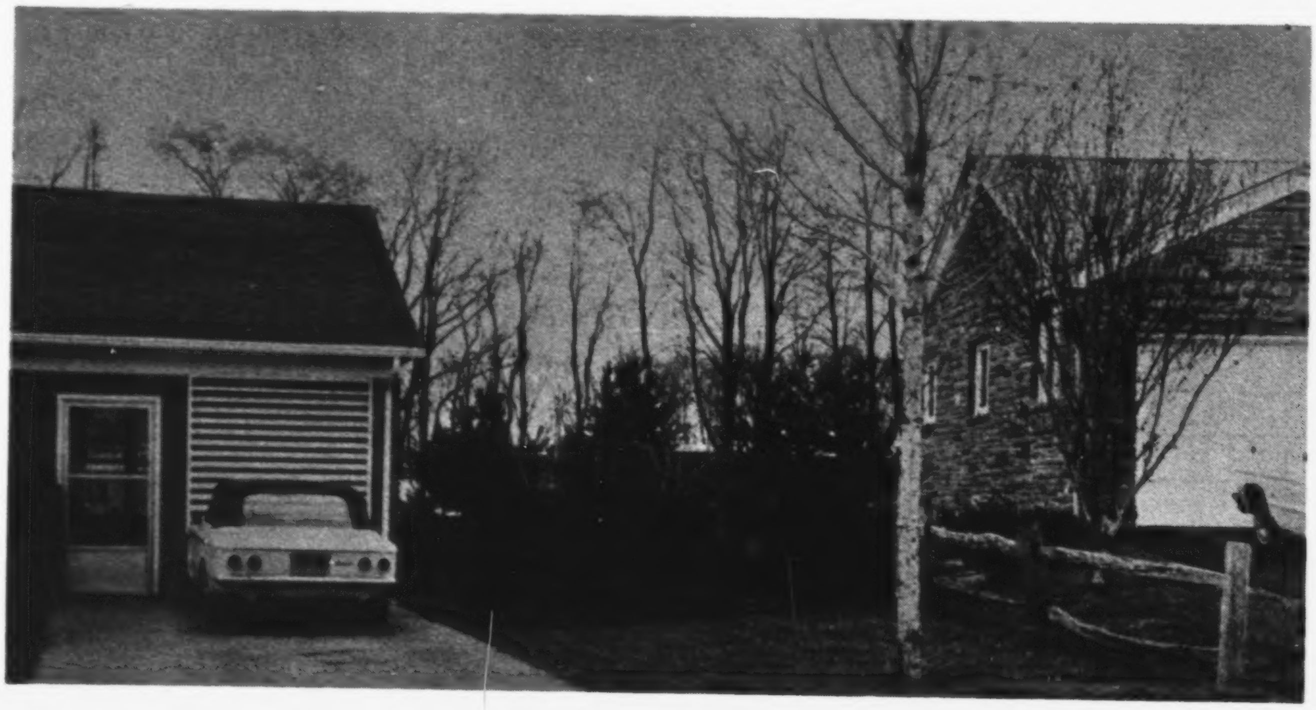


Figure 54. A combination of evergreen and deciduous material is pleasing.

Deciduous plants are almost limitless in number of different sizes and shapes. They include a great variety of textures, flowering and fruiting habits, foliage and bark colors, and branching habits. They are often used to add color and interest to plantings. By proper selection, it is possible to achieve a succession of flowering from spring through summer and fall.

Trees

Trees usually have only one major trunk and grow upright, but multiple-trunked ones, such as birch "clumps" are sometimes used. Trees are used for framing, shading, screening, windbreaks, and ornamental purposes. Trees may be deciduous or evergreen. Deciduous trees are best suited for framing and shading. Evergreen trees are more effective for windbreaks and screens because they keep their foliage throughout the year.

Tall trees are used to provide a canopy or a background for a house. They should be planted no closer than 20 feet from the building. Small trees can be used for framing a one-story house and should be planted forward and to the side of the house. Most tall trees recommended for framing are also valuable sources of shade. Trees should be selected that grow rapidly, have good growth habits, and are resistant to pests and wind damage.

Selecting tree species for screening depends upon the planting space available, screen height needed, and screen density desired. For narrow dense screens, evergreens are recommended. When space is available, deciduous trees or combinations of both evergreen and deciduous materials can be used.

To be most effective, windbreaks should be at least as tall as the object being protected. When possible, plant more than one row of trees for windbreaks and stagger them.

Many species of trees may be used as specimens; however, smaller trees are usually selected for ornamental use on residential lots. Flowering, fruiting, foliage, branching, and bark characteristics are of primary importance in selecting a tree for a specimen planting. For more information on trees read Trees for American Gardens, Reference No. 54 and The Tree Identification Book, Reference No. 53.

Shrubs

Shrubs are characterized by having many stems. They may be evergreen or deciduous. Shrubs have a wide variety of growth, flowering, and fruiting habits. Common uses of shrubs include hedging, bed plantings, screening, and specimen plantings. Planting distances between grouped shrubs are usually equal to their mature spread. Planting distances between shrubs used for hedges may be closer. Flowering shrubs should be selected to give a succession of flowering through spring, summer, and fall.

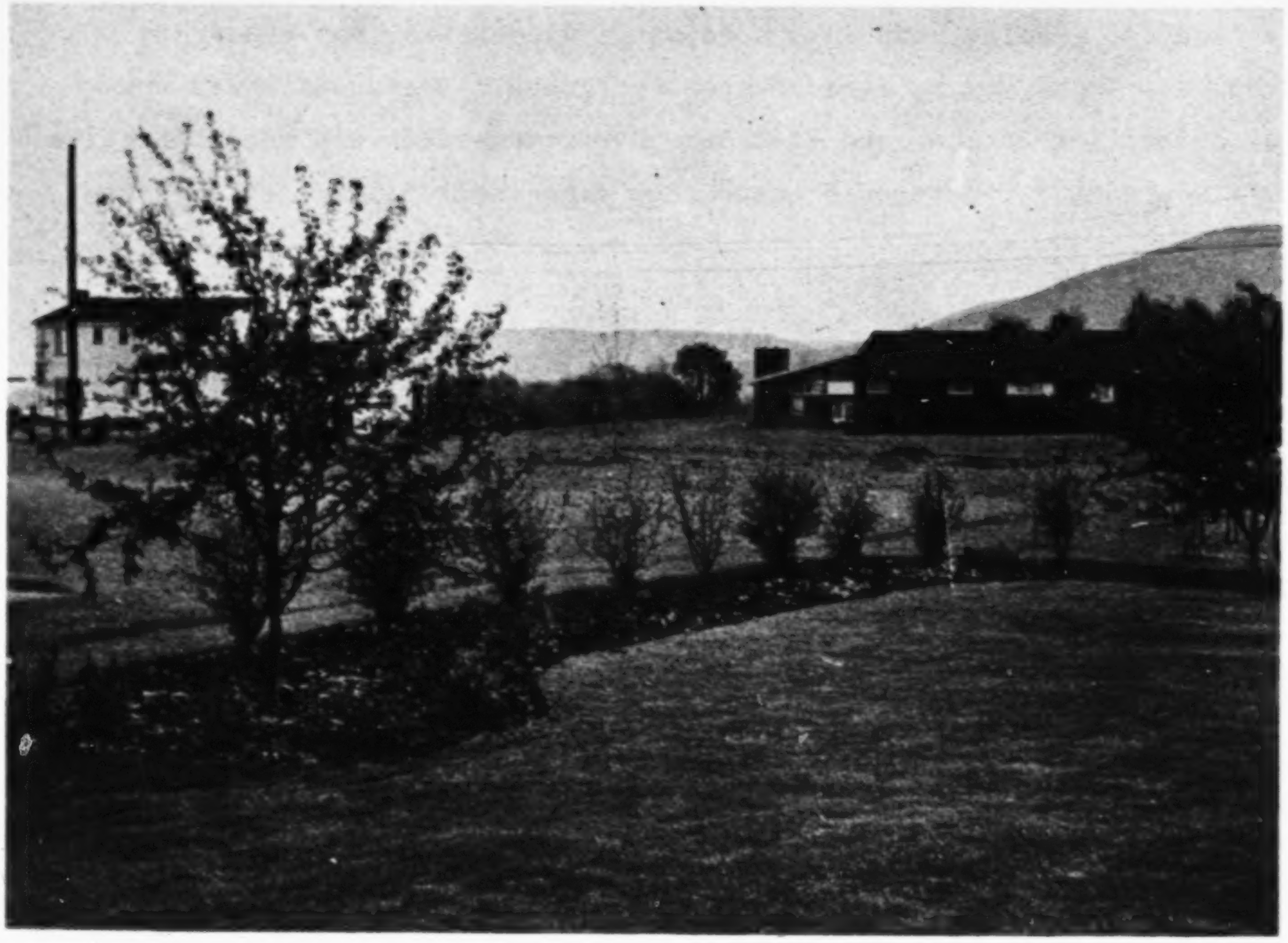


Figure 55. Trees and shrubs should be planted in groups.

Hedges represent an important use of shrubs. They are useful for complementing horizontal building lines, for screening purposes, and for regulating traffic in a landscape. Hedges are usually less expensive to install, require lower maintenance, and present a "softer" appearance than fences. Careful selection of species will reduce pruning and other maintenance to a minimum.

Shrubs for screening also are selected according to the planting space available, and the screen height and density needed. In grouping shrubs for screens, beds, and border plantings, low growing shrubs should be placed near the front and taller shrubs placed near the back. Some trees and large shrubs having particularly desirable features may be substituted for smaller plants if pruned heavily, but the constant maintenance required may become a nuisance.

Shrubs which are selected for specimen plants often have desirable flowering, fruiting, or other qualities that increase their attractiveness.

Specimen plantings add more to the landscape when planted alone where they can attain maximum development.

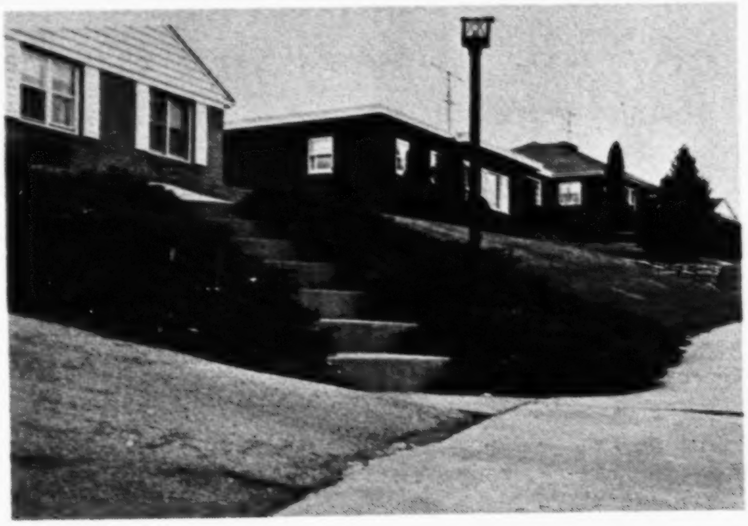


Figure 56. Creeping juniper as a groundcover.

Groundcovers

Groundcovers have low maintenance requirements and are often used in problem areas which are not favorable for grasses or shrubs. The term "groundcover" includes any low, spreading, or trailing plants that form dense, spreading mats of vegetation. They may be evergreen or deciduous. Groundcovers may be used: (1) to tie groups of shrubs together, (2) to provide cover under trees or other shady areas where grass cannot be established, and (3) to provide cover on banks and rocky areas where grass maintenance is difficult.

For more reading see Ground Cover Plants, Reference No. 19.

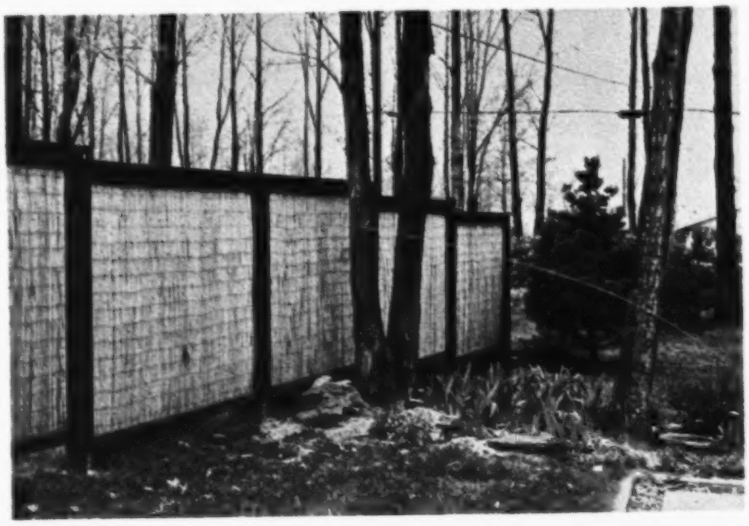


Figure 57. Sweet Woodruff groundcover in dense shade.

Figure 58. Hall's Honeysuckle clothes a large bank.

Espaliers

Espaliers are trees, shrubs, or vines fastened to walls or fences and usually trained in formal patterns. They create interest, color, and patterns in the landscape. The training of espaliers requires considerable time and effort and should be used only if proper care can be given to the plants.

Vines

Deciduous and evergreen vines are useful for softening harsh lines of walls and buildings. Some clinging vines will naturally cling to rough surfaces while twining types need open supports. If a trellis appears out of place, use wire and hooks for supports. Vines are especially useful where planting space in front of a wall is narrow.

For more information on shrubs and vines read Shrubs and Vines for American Gardens, Reference No. 46, and The Shrub Identification Book, Reference No. 52.

Herbaceous Plant Material

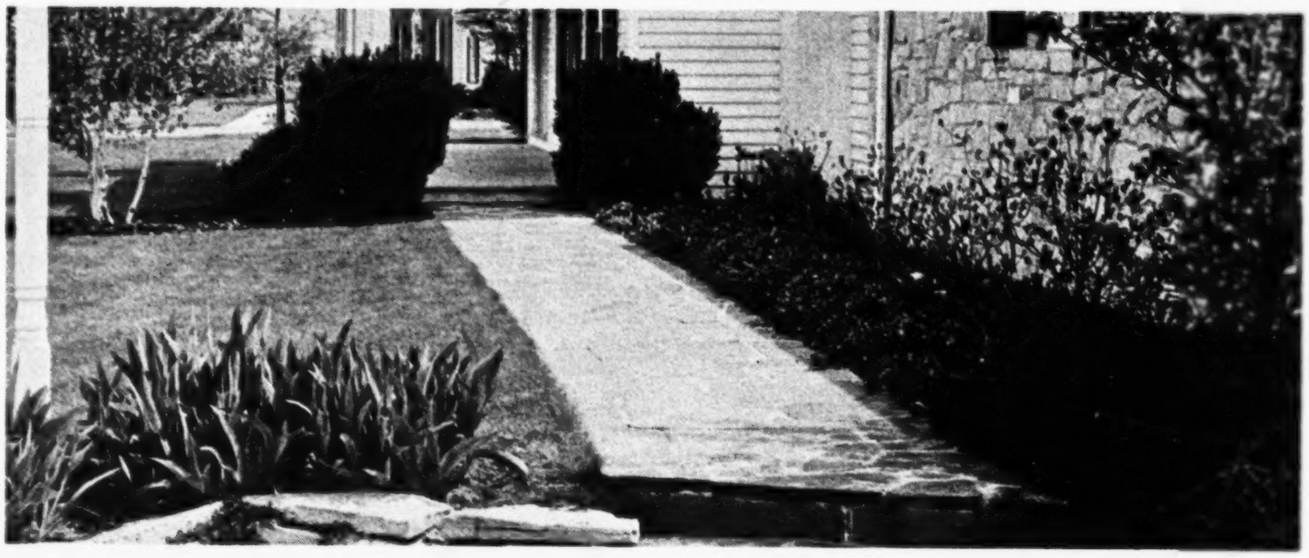


Figure 59. Bearded iris in left foreground is an easily grown perennial with attractive foliage.

Beds of flowers provide important sources of long lasting color and brilliance for the landscape. Herbaceous plant materials are nonwoody plants which have above ground parts that live only one season.

They may be annuals or perennials. There are three general forms of flowers: (1) spike flowers, (2) round flowers, and (3) intermediates. Round and intermediate forms of flowers should be used for the major portion of the bed. Spiked forms may be used for accent purposes. Red, orange, and yellow are warm colors. Greens, blues, and violets are cool colors. Flower beds usually have sequences of warm or cool colored flowers. Taller growing flowers are placed near the back of the flower bed. There are endless possibilities in the use of herbaceous plants. Unless the homeowner gardens as a hobby, they should be used only in small areas and close to where people pass or stop. For more reading see America's Garden Book, Reference No. 3.

The Planting Plan

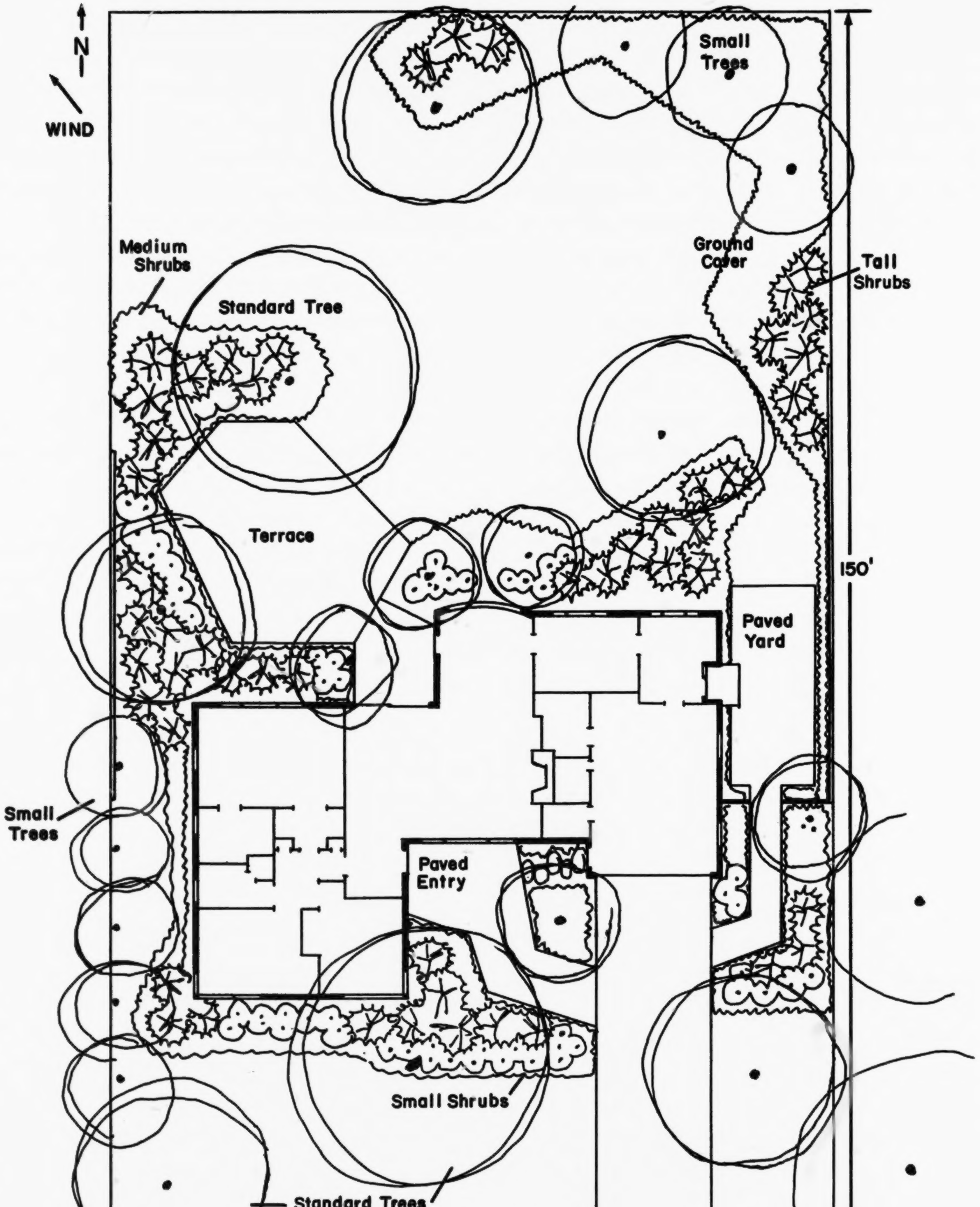
The Planting Plan may be developed from a Structural Plan by determining the appropriate kinds of plants (trees, shrubs, vines, groundcovers, and herbaceous plants) needed to fit the landscape. One has further to decide whether particular masses or individual plants should be deciduous or evergreen, what sizes are needed, and what shapes (forms) are required. An example of a Planting Plan is given on pages 94 and 95.

Selection of Plant Material

After the Planting Plan has been developed, one is ready to complete the Finished Landscape Plan. This is done by putting labels on the plants in the plan to designate the species and varieties to be planted. The owner may desire some special varieties to be planted. These should be included if at all possible. Five environmental factors should be considered in choosing plants:

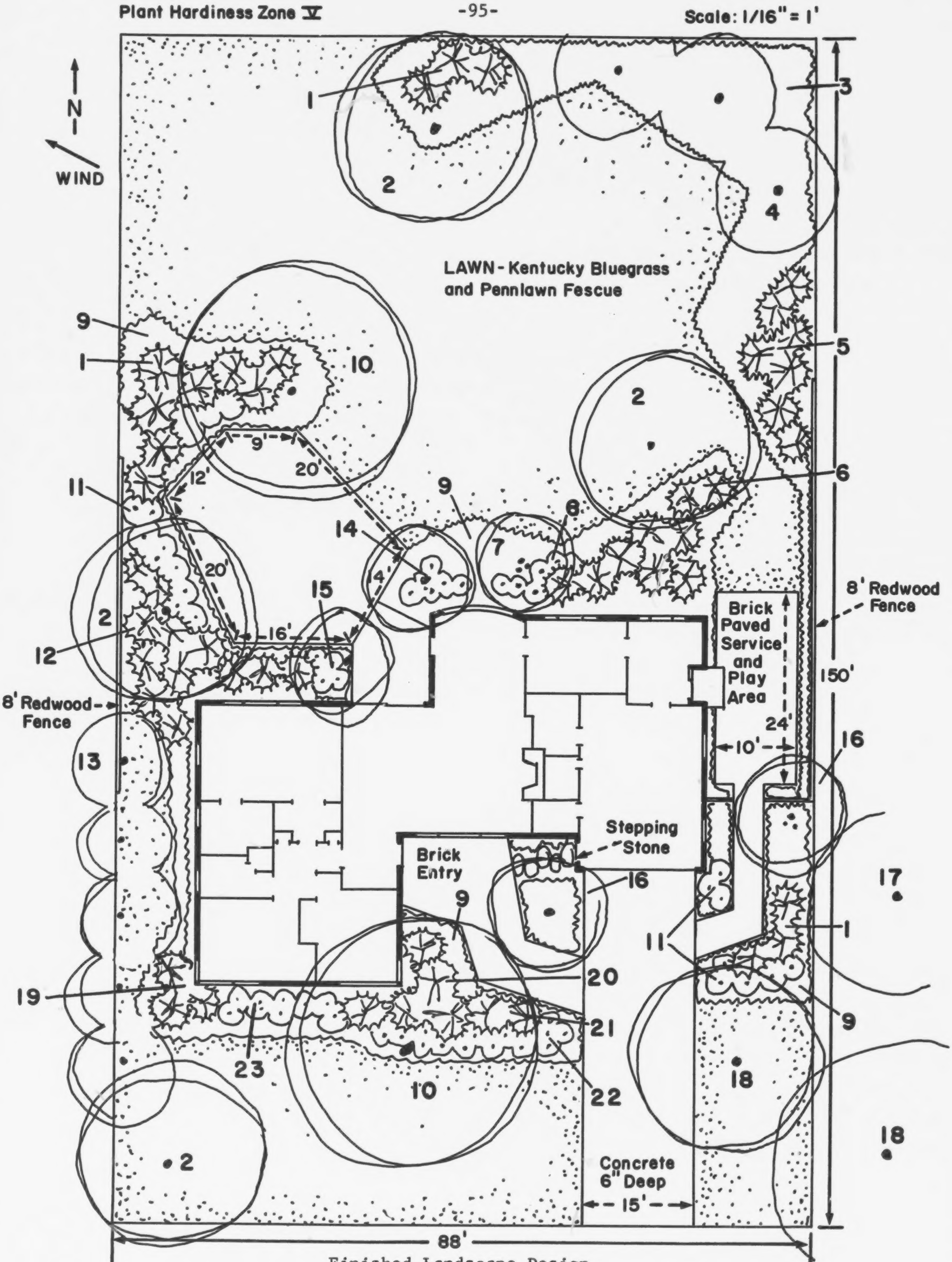
1. Soil - drainage, type, acid, alkaline
2. Light - sun, filtered sunlight, shade
3. Moisture - wet, medium, dry
4. Exposure - calm air, breezes, strong winds
5. Hardiness zone - Plants for a particular zone, say Zone V, may be selected from any zone groups, I through V; any from Zone VI and higher should not be used in Zone V.

Color succession in the landscape is also an important consideration. The designer deliberately selects certain plants that have colorful flowers in early spring. He chooses others for flowers in mid-spring, late spring, early summer, mid-summer, and so on throughout the seasons. He may also select certain plants for colorful fruit and brilliant fall color. His objective is to have an interesting, continuously changing, color plan for the landscape. Certain plants, such as Forsythia, may be colorful only in early spring. Others, such as the Blackhaw Viburnum, have attractive flowers in mid-spring, colorful fruit in early fall, and brilliant foliage in the autumn. The plant tables in this handbook are a guide to help you in a selection of plants for a succession of color in the landscape. An example of a Finished Landscape Plan is shown on page 95.


N
WIND
Small Trees
Medium Shrubs
Standard Tree
Ground Cover
Tall Shrubs
Terrace
150'
Paved Yard
Small Trees
Paved Entry
Small Shrubs
Standard Trees
88'
Plant Hardiness Zone V
Scale: 1/16"=1'

PLANT IDENTIFICATION KEY FOR THE FINISHED LANDSCAPE DESIGN

1. *Kalmia latifolia*, Mountain Laurel
2. *Quercus palustris*, Pin Oak
3. *Hedera helix baltica*, Baltic English Ivy
4. *Cornus florida*, White Flowering Dogwood
5. *Forsythia intermedia*, "Lynwood Gold" Forsythia
6. *Lonicera fragrantissima*, Winter Honeysuckle
7. *Crataegus oxycantha*, "Paul's Scarlet" English Hawthorn
8. *Cotoneaster horisontalis* "depressa", Rock Cotoneaster
9. *Pachysandra terminalis*, Japanese Spurge
10. *Acer rubrum*, Red Maple
11. *Abelia grandiflorum*, Abelia
12. *Rhododendron mollis*, Mollis Azalea
13. *Malus arnoldiana*, Arnold Crabapple
14. *Rhododendron schlippenbachii*, Pink Shell Azalea
15. *Mahonia aquifolium*, Oregon Grapeholly
16. *Cornus florida*, Pink Flowering Dogwood
17. *Pinus strobus*, White Pine
18. *Quercus coccinea*, Scarlet Oak
19. *Rhododendron hybrid*, Rhododendron
20. *Taxus cuspidata* '*capitata*', Upright Japanese Yew
21. *Viburnum carlcephalum*, Fragrant Viburnum
22. *Rhododendron Kaempferi*, Kaempferi Azalea
23. *Viburnum opulus hanum*, Dwarf Cranberrybush Viburnum


Plant Hardiness Zone V
Scale: 1/16" = 1'
N
WIND
LAWN - Kentucky Bluegrass and Pennlawn Fescue
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
9'
12'
20'
20'
16'
4'
8' Redwood Fence
8' Redwood Fence
Brick Paved Service and Play Area
24'
10'
150'
Stepping Stone
Brick Entry
Concrete 6" Deep
15'
88'

Finished Landscape Design
(See Plant Identification Key, p. 94)

SUGGESTIONS AND REFERENCES FOR THE TEACHER

This problem area has taken the student through the final three steps in the development of a complete landscape design. Basic information about structures, structural materials, and plant materials have been presented to enable the student to develop the structural and planting plans. It was suggested that alternative structural plans also be developed. From the preceding plan, the Finished Landscape Design was prepared.

This problem area is very important. Every effort should be made to motivate the students so that they may learn both the factual information needed for landscape planning and the steps in planning.

Practice is needed to help students become more proficient in preparing landscape designs. No amount of lecturing or reading can substitute for the drawing skill and individual problem solving associated with landscaping home grounds.

Learning Resources

References:

- Landscape Architecture: The Shaping of Man's Environment, Reference No. 27.
- Ground Cover Plants, Reference No. 19.
- Pronouncing Dictionary of Plant Names, Reference No. 43.
- Shrubs and Vines for American Gardens, Reference No. 46.
- Sunset Book Series, Reference No. 48.
    - Children's Rooms and Play Yards
    - Decks for Outdoor Living
    - Garden Art and Decoration
    - Garden Color
    - Garden Pools, Fountains, and Waterfalls
    - Garden Work Centers
    - Gardening in Containers
    - How to Build Fences and Gates
    - Sunset Patio Book
    - Walks, Walls, and Patio Floors
- The Art of Home Landscaping, Reference No. 49.
- The Shrub Identification Book, Reference No. 52.
- The Tree Identification Book, Reference No. 53.
- Trees for American Gardens, Reference No. 54.

Audio Visual Aids:

"Commonly Used Trees, Shrubs, and Groundcovers," series of 2" x 2" color slides, Department of Agricultural Education, The Pennsylvania State University, University Park, Pennsylvania 16802.

"European Gardens," film Ortho Film Library, California Spray Chemical Corporation, 200 Bush Street, San Francisco, California 49170.

"Wonderful World of Bulbs," film, Ortho Film Library, California Spray Chemical Corp., 200 Bush Street, San Francisco, California 49170.

Suggested Learning Activities

1. Begin teaching the unit by showing examples of Structural Plans, Planting Plans, and Finished Landscape Designs.
2. Provide the students with the opportunity to study landscape symbols. A short identification test or exercise might be appropriate.
3. Arrange for a field trip to study landscape structures such as walks, drives, steps, paved terraces, fences, etc.
4. Arrange for a construction contractor to discuss the advantages of different structural materials with the class.
5. Encourage students to become skilled in drawing plant forms and structures used in landscapes.
6. Sponsor an exhibition of plant and structural materials commonly used in landscapes.
7. Have students make up lists of plant materials which are similar in form, texture, and size.
8. Have students make a Structural Plan, an Alternative Structural Plan, a Planting Plan, and a Finished Landscape Design.
9. Have each student prepare a list of appropriate substitute plants for each type of tree and shrub indicated in a Finished Landscape Design.
10. After a student has completed his first Finished Landscape Design, he should continue to make as many more as possible. Five or six would not be an excessive number. As he gains experience he may find it convenient to combine the Structural Plan and the Planting Plan steps.
11. Students should be encouraged to make short weekly visits to the school arboretum or to nearby arboretums to study labeled plant specimens.
12. Weekly plant identification review quizzes, using cut branches as specimens, will help students to keep in mind the range of plants that may be used in landscape design.

13. To help students visualize the three-dimensional aspect of landscape design have them construct landscape models from a Finished Landscape Design. A scale of 1 inch equals 5 feet is often used and all parts of the model must conform to the scale. Several materials are often used for this purpose: cardboard, styrofoam, plastic sponges, sawdust, sandpaper, paint, wood, and wire.
14. Display the Plant Hardiness Zone Map published by the U. S. D. A., and ask students to list major cities in the United States which are in their zone.
15. Have students plan a school arboretum, or an arboretum for a town park. Plans may be available from your State University.

Suggested Placement Experience

After each student has completed five or six Finished Landscape Designs, arrange for him to make several landscape designs for residential sites under the supervision of a landscape-nurseryman. Ask the landscape-nurseryman to examine them and offer suggestions for improvement.

Test

1. Name several transport structures.
2. Name several recreational structures.
3. What is the formula for constructing safe outdoor steps?
4. Dry walls should never be over five feet high. Why?
5. How can one avoid having frost in the soil move fence posts out of alignment?
6. What are the important things to consider in selecting paving material for a terrace?
7. List the safety precautions that should be considered in planning for a swimming pool on a residential property.
8. List the things that should be considered in selecting a particular plant for a certain position in the landscape.
9. For what purposes are groundcovers used in the landscape?
10. How does a landscape designer provide for a succession of color interest in the landscape?

PROBLEM AREA 6

ESTIMATING LANDSCAPE COSTS

Student Learning Objectives

1. Develop the ability to estimate the costs of designing and establishing a landscape accurately.
2. Develop the ability to understand family financial problems and to design a landscape plan within the economic limit of the situation.

Key Questions

1. What basis is used to determine the design and installation cost for landscaping a site?
2. How can landowners lower the initial cost of establishing a landscape?
3. Before beginning to design a landscape for a client, what is the first thing the designer should do?

New Words

Complexity - the degree of difficulty, the relationship of the whole landscape to all its individual parts

Initial - beginning, first

Estimating Landscape Costs

Landscaping costs vary from site to site, primarily because of the complexity of the design, the plant materials selected, and the labor costs. A complete landscaping job may cost from 10 to 20 percent of the value of the house and lot. This estimate includes the cost of landscape design and establishment. Landscaping costs should be considered primarily for the value which it adds to the livability of the site. (See Landscaping for Modern Living, Reference No. 34, pp. 184-185.)

Landscape plans are usually drawn and shown to the customer for approval. Customers may be charged a specified fee or an hourly rate. A beginning landscape designer might charge about $4.00 per hour for his time, while an experienced one might make about $6.00 per hour. Designers with several years of experience might make a flat charge of $75 to $100 for a residential design for an average-size city lot. An agreement regarding financial arrangements should be reached in the initial discussions. Firms which design landscape plans, sell landscaping materials, and establish landscapes often have a specific charge for the plan, which may be discounted if the customer buys the plants from the same firm. It may be further discounted if the firm does all the construction work and the planting. Many landscape-nurserymen simply charge the retail price for trees and shrubs installed in the landscape. They estimate that the labor and other costs are covered by the difference between the wholesale price they pay for the plants and the retail price the customer is charged. This is probably a sound practice only if several hundred dollars are involved. For complete landscape construction, charges are usually based on materials, plus labor, equipment depreciation, and overhead.

The cost of construction materials and plant materials can be found in trade catalogs. Some guides to estimating construction costs are given in Ideas for Landscaping Your Home, Reference No. 48, pp. 60-63.

Most state departments of agriculture issue annual lists of licensed nurserymen. Some states also publish bulletins similar to the 1968 Directory of Pennsylvania-Grown Nursery Stock. The Plant Buyer's Guide, published by the Massachusetts Horticultural Society, lists world-wide plant sources. Labor costs vary from one locality to another. Landscape designers and landscape-nurserymen should receive salaries appropriate for their training, skill, and reputation.

Sometimes it may not be economically possible to complete the entire landscape plan in one year. Often a three to five year program can be undertaken to offset the initial cost. The first unit should include all paved areas, steps, pools, walls, fences, trees (because they take the longest to reach maturity), and turf. The second phase could include shrubs. The third phase should include groundcovers, bulbs, and flowers. Possibly garden ornaments, such as statuary and tubbed plants, could be added last.

An example of a cost estimate for the design, specifications, and installation of a landscape plan is given on page 98.

BEETLEBUNG LANDSCAPE SERVICE

Centre, Pennsylvania

Estimated cost for design, specifications, and installation of landscape for Mr. O. B. Joyful, 101 Celestial Terrace, Centre, Pennsylvania.

Landscape Design

Site analysis and sketches, 4 hrs. @ 4.00	$16.00	
Family needs analysis and sketches, 4 hrs. @ 4.00	16.00	
Soil test	5.00	
Preliminary plan drawing, 6 hrs. @ 4.00	24.00	
Consultation, 2 hrs. @ 4.00	8.00	
Final plan, drawing and specifications, 4 hrs. @ 4.00	16.00	
Consultation on site, 2 hrs. @ 4.00	8.00	
TOTAL		$ 93.00

Installation

Grading, 4 hrs. @ 8.00	$ 32.00	
Terrace, 12' x 25', red patio tile on 2" sand base @ 2.00 per sq.ft.	600.00	
Redwood fence, basketweave, 6' high, 70' long, posts set 36" deep in concrete, @ 3.00/linear ft.	210.00	
Turf, seeded 50% Kentucky Bluegrass, 50% Pennlawn Fescue, *best* quality seed, leveling, fertilizer, seeding, light straw mulch	300.00	
Trees and shrubs*, planted		
2 *Quercus palustris*, Pin Oaks, 2½" diameter, B & B, @ 100	200.00	
1 *Pinus strobus*, White Pine, 5-6', B & B @ 18.00	18.00	
3 *Cornus florida*, Flowering Dogwood, "White Cloud," 5-6', B & B @ 14.00	42.00	
6 *Forsythia*, "Lynwood Gold," 2-3', @ 1.50	9.00	
6 *Lonicera fragrantissima*, Winter Honeysuckle, 2-3 @ 1.50	9.00	
25 *Viburnum opulus* '*nanum*,' Dwarf Cranberrybush 8-10" spread @ 1.35	33.75	
2 *Taxus cuspidata* '*densiformis*', Dense Taxus, 18-24", B & B @ 8.00	16.00	
5 *Juniperus virginiana*, Red Cedar, "Canart," 4-5', B & B @ 12.00	60.00	
7 *Syringa persica*, Persian Lilac, 18-24", @ 1.50	10.50	
3 *Pieris japonica*, Japanese Pieris, 18-24", B & B @ 8.00	24.00	
12 *Azalea*, "Kaempferi," 15-18", B & B @ 6.75	81.00	
3 *Hibiscus syriacus*, Rose of Sharon, "Coelestis," 2-3, @ 2.00	6.00	
200 *Vinca minor*, Periwinkle "Bowles," 2½" pots, @ 35¢	70.00	
200 *Hedera helix*, English Ivy, "Baltic," 2½" pots, @ 35¢	70.00	
Peat, 6 bales, @ 5.00	30.00	
TOTAL		$1,821.25
Landscape Design and Installation Total		$1,914.25

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*All plant material must meet the Standard Grades of the American Association of Nurserymen.

An example of a three-year budget for the cost estimate given on page 99 is shown below:

First Year

Landscape Plan	$ 93.00
Grading	32.00
Terrace	600.00
Turf	300.00
3 Trees	218.00
1 Bale Peat	5.00
TOTAL	$1248.00

Second Year

Redwood Fence	$210.00
Remaining Shrubs	291.25
3 Bales Peat	15.00
TOTAL	$516.25

Third Year

Groundcovers	$140.00
2 Bales Peat	10.00
TOTAL	$150.00

SUGGESTIONS AND REFERENCES FOR THE TEACHER

This problem area is primarily intended to develop an awareness of the costs and financial arrangements involved in landscape designing and installation. Because landscape designers may operate as independent businessmen, or as employees of a landscape-nurseryman, or employees of a large garden store, there are many ways in which they may be renumerated for their services. As a designer's skill and speed improve, so should his renumeration.

Because a landscape designer is often asked to make estimates, a student should become familiar with the costs involved in the construction work and planting or residential designs.

Learning Resources

References:

Directory of Pennsylvania-Grown Nursery Stock, Reference No. 13.

Ideas for Landscaping Your Home, Sunset Book Series, pp. 60-63, Reference No. 48.

Landscaping for Modern Living, Sunset Book Series, pp. 184-185, Reference No. 48.

Sunset Patio Book, Sunset Book Series.

The Plant Buyer's Guide, Reference No. 51.

Resource People:

Local nurserymen, building materials suppliers, and building contractors.

Suggested Learning Activities

1. Have the class visit several landscape designers and discuss renumeration with them.
2. Have the class ask several landscape designers to exhibit examples of the specifications that accompany landscape designs.
3. Have the class members draw up estimated costs for design, specifications, and installation for three landscape designs each has made. Prices for plant material may be found in nursery price lists and catalogs.
4. With the material developed in suggestion three, have each student work out a three or four year budget for each of the landscape plans.

5. For each of the three cost estimates completed in suggestion three, have the students prepare a new estimate to reduce the cost by 20 percent by substituting less expensive plant material. Smaller sizes or different species of plants may be used.

Test

1. What hourly rate should a beginning landscape designer charge for his services?
2. How much time does it take to make a site analysis and sketches for the average size residential landscape?
3. For pedestrian traffic, what does it cost per square foot to lay concrete? Bricks? Slate? Wood chips?
4. Where can one obtain approximate retail prices for nursery stock?
5. Where can one obtain approximate costs for landscape constructions such as fences, walls, walks, pools, benches, and steps?
6. Why is it important to know the technical names of landscape plants?
7. What should be the minimum number of landscape plants a beginning landscape designer should know?
8. Why is it important to know a number of species of plants having similar form, size, and texture?
9. In budgeting a landscape job, what kinds of items should be done the first year? The second? The third? The fourth?

List of References

1. A Guide to Home Landscaping. Bushey, D. J. McGraw-Hill, New York. 1956.
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3. America's Garden Book. Bush-Brown. Scribner's, New York. 1958.
4. Approved Practices in Landscaping the Home Grounds. Hoover, Norman K., Interstate Printers and Publishers, Inc., Danville, Illinois. 1966.
5. Basic Gardening Illustrated. Sunset Book Series. Lane Book Co., Menlo, California. $1.95.
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    b. Building Barbecues.
    c. Children's Rooms and Play Yards.
    d. Decks for Outdoor Living.*
    e. Entryways and Front Gardens.
    f. Garden Art and Decoration.
    g. Garden Color.
    h. Garden Plans.
    i. Garden Pools, Fountains, and Waterfalls.
    j. Garden Work Centers.*
    k. Gardening in Containers.
    l. How to Build Fences and Gates.*
    m. How to Build Patio Roofs.
    n. How to Improve Your Home by Landscaping.
    o. Ideas for Entries and Front Gardens.
    p. Ideas for Landscaping Your Home.
    q. Landscaping for Modern Living.
    r. Lawns and Groundcovers.
    s. Planning and Landscaping Hillside Homes.
    t. Rock Gardens.
    u. Sunset Patio Book.*
    v. Sunset Patio and Building Book. (contains the 5 books marked*)
    w. Swimming Pools.
    x. Vegetable Gardening.
    y. Walks, Walls, and Patio Floors.

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APPENDIX A

Plant Materials List

Use ______________________________ Name ______________________________

Form: ____________________________

Size - mature height: ______________

Size - mature spread: ______________

Texture: very fine ____ fine ____ medium ____ coarse ____ very coarse ____

Density: compact _____ medium _____ open _____

Foliage: appears early _____ late _____

drops early _____ late _____

color _______________ fall color _______________

Flowers: size _______ color _______ fragrance _______

Fruit: showy _______ color _______ when appearing _______ use _______

Bark: color _______ texture _______ other ___________________________

Soil preference: sand _______ clay _______ loam _______

Moisture preference: wet _______ dry _______ intermediate _______

Light preference: sun _______ shade _______ semi-shade _______

pH preference: acid _______ alkaline _______ neutral _______ other _______

Rate of growth: slow _______ moderate _______ fast _______

Hardiness: tender _______ semi-hardy _______ hardy _______

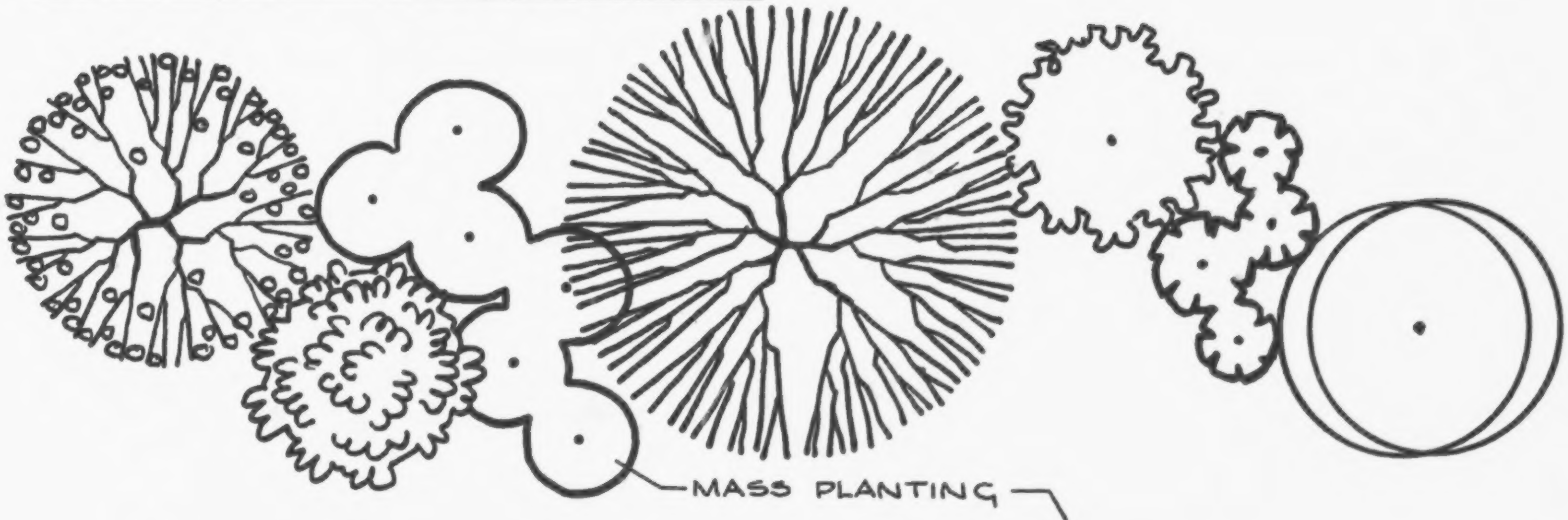
Maintenance:

cleanliness ____
pruning ____
fertilization ____
disease ____
insects ____

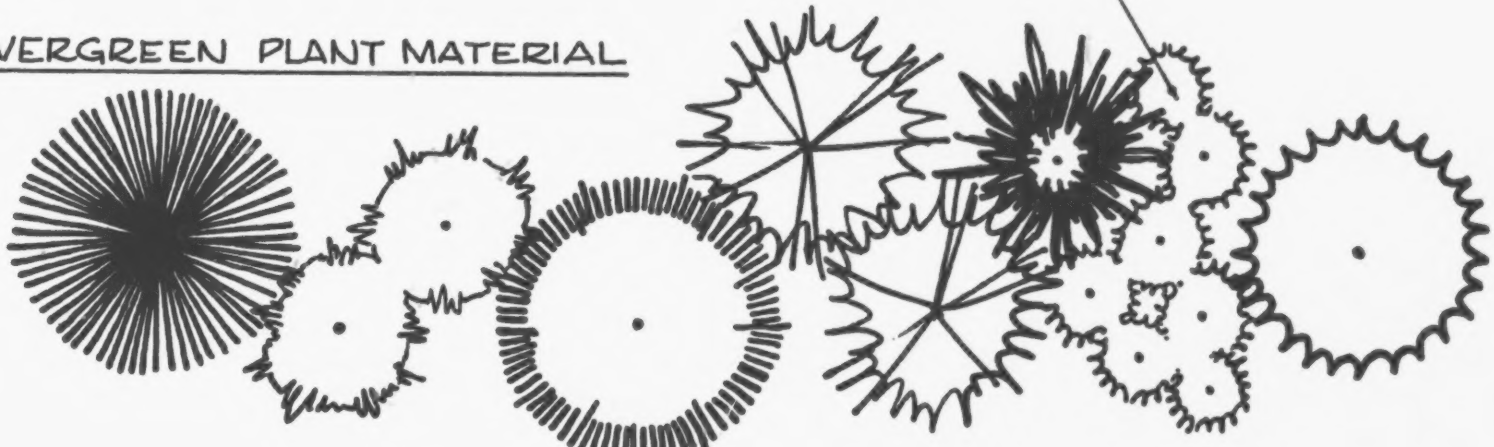
APPENDIX B

Landscape Symbols

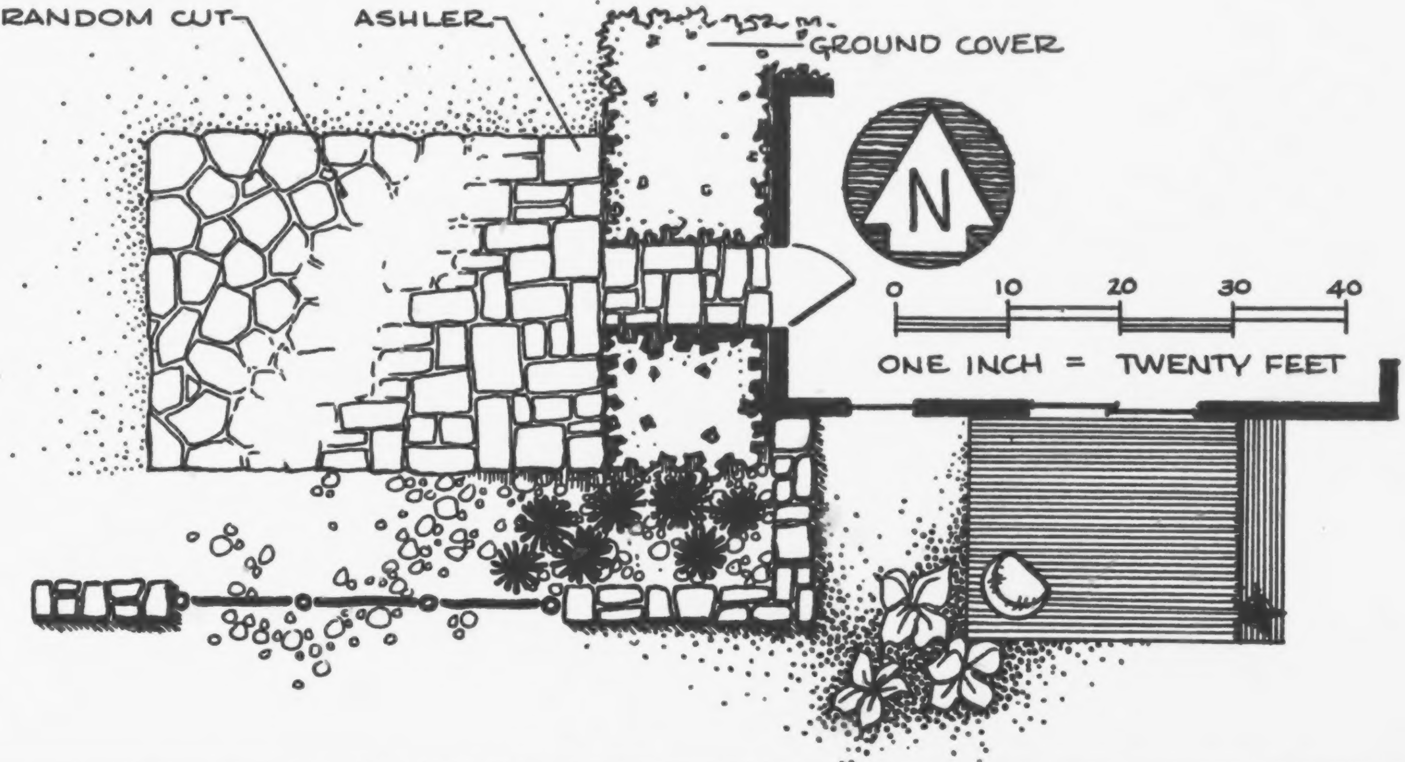
DECIDUOUS PLANT MATERIAL


MASS PLANTING

EVERGREEN PLANT MATERIAL



SITE SYMBOLS


RANDOM CUT
ASHLER
GROUND COVER
N
0
10
20
30
40
ONE INCH = TWENTY FEET

APPENDIX C

Identification and Classification of Plant Materials Commonly Used for Landscape Plantings

IDENTIFICATION AND CLASSIFICATION OF PLANT MATERIALS COMMONLY USED FOR LANDSCAPE PLANTINGS

Everyone involved in landscape design, nursery production, or landscape maintenance and establishment should be able to identify plant materials commonly used for landscaping. Certainly the landscape nurseryman must know the plants which he grows or buys to use in landscape plantings. Garden center workers and salesmen must know plant materials in order to sell effectively. Finally, ground superintendents, park foremen, and landscape workers should know plant materials in order to properly establish and maintain landscape plantings.

There are two methods of identifying plant materials. Each has its merit. The first method is to memorize the appearance of each plant. The second method requires the use of a keyed system of classifying and identifying characteristics of plant materials.

Young people entering landscaping need to acquire rapidly a general knowledge of the trees, shrubs, groundcovers, and vines commonly used in landscape plantings. The visual system is best for the beginner. Later he may want to use the keyed system.

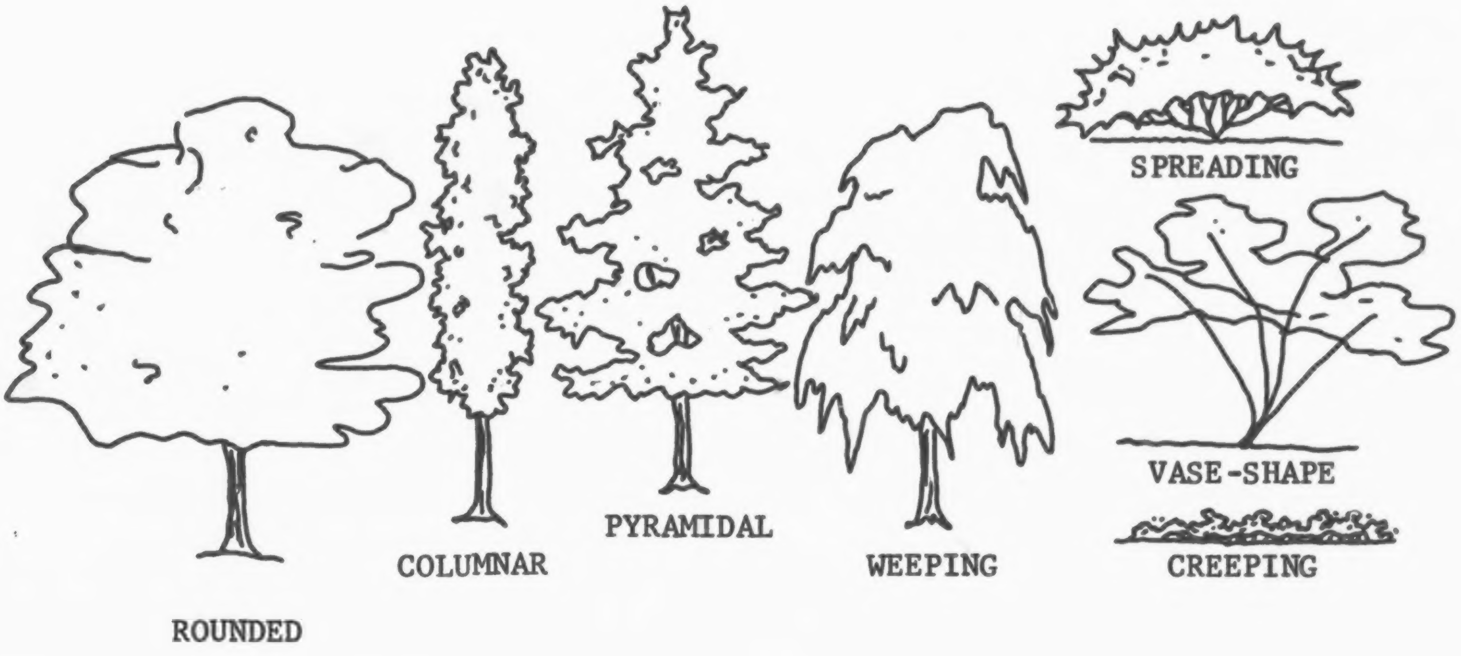
Classifying plant materials according to certain characteristics makes learning easier. These materials can be classified as deciduous (those which drop their leaves in the fall) and evergreen (those which do not drop their leaves). Both may be further classified as broad-leaved or narrow-leaved. Next, they can be classified as trees, shrubs, groundcovers, or vines. Trees may be classified as small or large. Shrubs are usually classified further as small, medium, or large. This classification could be extended as the beginner gains experience.

The beginner should learn a few plant materials in each category. For example, he should learn three broad-leaved evergreen trees and three broad-leaved deciduous trees, etc. From this limited beginning, other materials can be learned as more experience is gained.

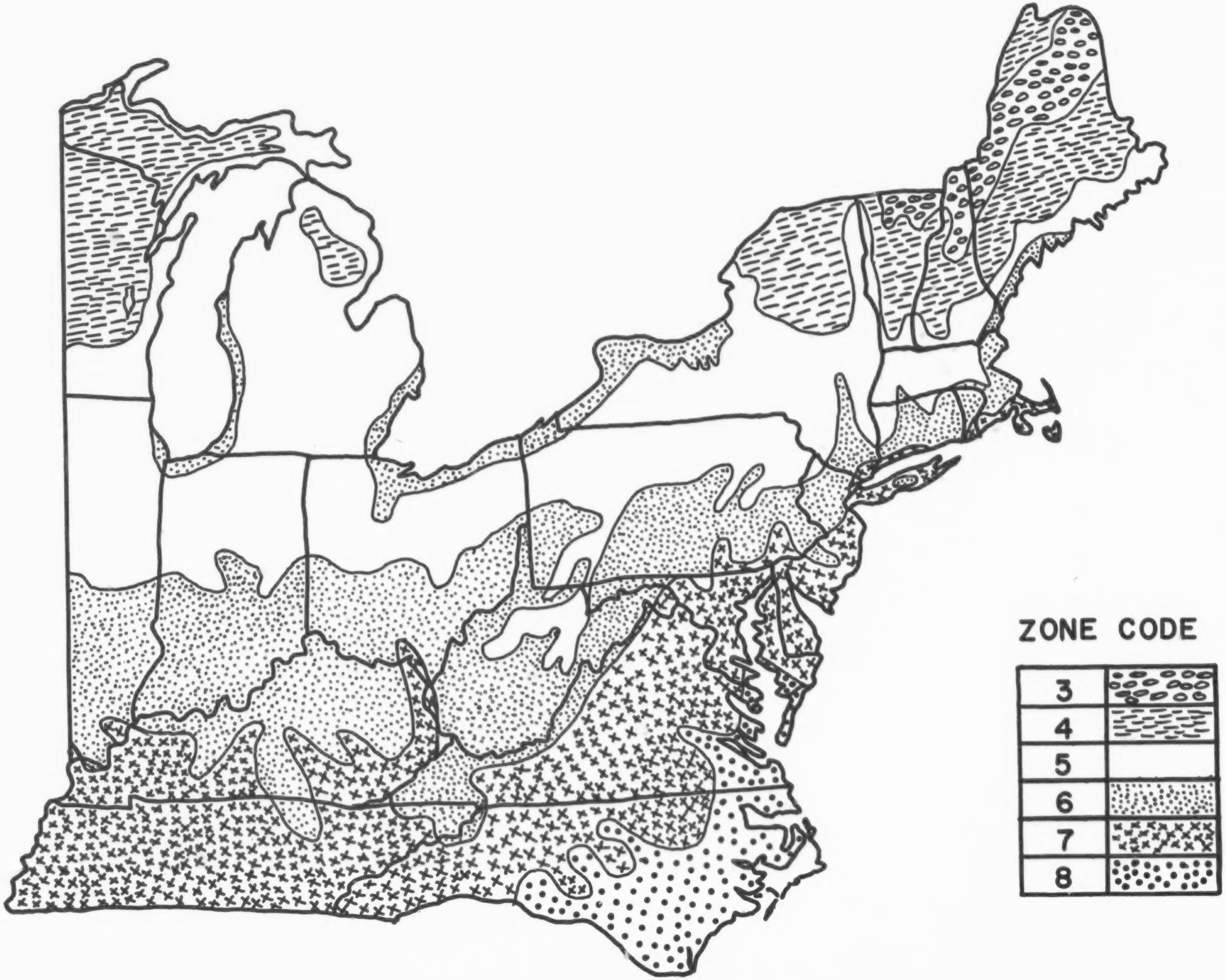
A complete display of plant materials commonly used for landscaping is not feasible in this handbook. It is suggested that the student use the tables of recommended plant materials in this appendix to learn 2 to 5 plants in each category. Also refer to Nursery Production - A Student Handbook, pp. 1-44, Reference No. 21. If available, study the slide series C - "Commonly Used Trees, Shrubs, Ground Covers, and Vines." For a more complete reference, see Wyman's books: Ground Cover Plants, Reference No. 15; Shrubs and Vines for American Gardens, Reference No. 27; and Trees for American Gardens, Reference No. 32.

Tables of recommended trees and shrubs follow. These tables may be used as references for selecting trees and shrubs to fit landscape plans you have prepared or they may be used as a study guide.

Sketches depicting some of the more common shapes of trees and shrubs are shown below. A Hardiness Zone Map also precedes the Tables of Plant Materials. When using the tables, one should know that plants indicated for a particular hardiness zone are also hardy in higher numbered zones, but not in lower numbered zones.



Plant Forms.



Plant Hardiness Zone Map for Certain Northeastern States *

* Adapted from Plant Hardiness Zone Map, Agricultural Research Service, United States Department of Agriculture, Miscellaneous Publication No. 814.

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Standard Deciduous Trees (40-160')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Color	Name	Comments
3-8	pyramidal when young, round at maturity	60'	50'	med.	brilliant red	Red Maple *Acer rubrum*	has red flowers which bloom in early April - grows well in low swampy areas
3-8	densely upright growth, pyramidal at maturity	75'	36'	med.	red and yellow	Column Red Maple *Acer rubrum* '*columnare*'	fast growing upright type, good street tree
3-8	rounded	90'	90'	large	yellow	Norway Maple *Acer platanoides*	dense head, often used as street tree
3-8	rounded	90'	90'	large	red	Norway Maple *Acer platanoides* '*Crimson King*'	deep red leaves all season
3-8	oval when young, rounded head when mature	110'	93'	med.	yellow and orange	Sugar Maple *Acer saccharum*	beautiful fall color, sap yields maple syrup
3-8	upright, narrow pyramidal head	100'	45'	med.	red and yellow	Pyramid Sugar Maple *Acer saccharum* '*pyramidale*'	similar form to Columnar Red Maple
4-8	densely pyramidal	108'	106'	med.	golden bronze	European Beech *Fagus sylvatica*	intolerant of compact soils, has glossy, dark green leaves, gray trunk
4-8	densely pyramidal	108'	106'	med.	bronze	Purple Beech *Fagus sylvatica* '*purpurea*'	intolerant of compact soils - purple leaves
4-8	wide-spreading, open	130'	130'	med.	yellow	Ginkgo *Ginkgo biloba*	picturesque fan-like leaves
4-8	narrow pyramidal	130'	40'	med.	yellow	Sentry Ginkgo *Ginkgo biloba* '*fastigiata*'	good street tree
4-8	broad and open	92'	112'	large	- - -	Thornless Honeylocust *Gleditsia triacanthos* '*inermis*'	thornless and densely branched, light shade

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Standard Deciduous Trees (40-160')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Color	Name	Comments
4-8	wide-spreading	135'	135'	large	- - -	"Sunburst" Honeylocust *Gleditsia triacanthos 'inermis'*	young foliage yellow, sometimes turns green in summer
4-8	wide-spreading	135'	135'	large	- - -	Moraine Locust *Gleditsia triacanthos 'inermis moraine'*	withstands city conditions well but has dangerous long thorns
4-8	broadly pyramidal	112'	71'	large	scarlet	Sweet Gum *Liquidambar styraciflua*	star-shaped leaves - used often along park-ways
4-8	broadly pyramidal, massive branches	160'	80'	med.	yellow	Tuliptree *Liriodendron tulipifera*	has greenish-yellow, tulip-shaped flowers which bloom in mid-June
4-8	pyramidal with pendulous branches	85'	50'	med.	scarlet to	Black Tupelo *Nyssa sylvatica*	has dense, dark green, lustrous foliage, excellent fall color
4-8	young trees are pyramidal - old trees are round	130'	107'	large	red	Northern Red Oak *Quercus borealis*	most rapid growing of all oaks, dense lustrous foliage make a good avenue tree
4-8	open and round-topped	80'	80'	large	scarlet	Scarlet Oak *Quercus coccinea*	good parkway tree, but difficult to transplant
5-8	young trees are pyramidal - old trees are round, open	96'	85'	med.	yellow to russet	Shingle Oak *Quercus imbricaria*	leaves without lobes, makes good hedges or screens, foliage lustrous dark green
4-8	pyramidal with drooping branches, dense branching	135'	135'	med.	scarlet	Pin Oak *Quercus palustris*	has picturesque growth habit, is easily transplanted, should not be planted near a street
5-8	open, broad head - short trunk	80'	80'	med.	brown	English Oak *Quercus robur*	these trees grow in the famous Sherwood Forest, slow growing, dark green leaves

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Standard Deciduous Trees (40-160')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Color	Name	Comments
5-8	upright, columnar	80'	30'	med.	brown	Pyramidal English Oak *Quercus robur 'fastigiata'*	of the type grown in the famous Sherwood Forest
7-8	wide spreading	60'	120'	med.	- - -	Live Oak *Quercus virginiana*	evergreen in southern range, very popular, long-lived
4-8	rounded form, long, pendulous branches	40'	60'	med.	- - -	Thurlow Weeping Willow *Salix elegantissima 'thurlow'*	best variety of several available
3-8	densely pyramidal	100'	50'	small	yellow	Little-leaf Linden *Tilia cordata*	fragrant flowers, grows well in cities, dense foliage gives perfect shade

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Trees (8-35')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Name	Comments
6-7	spreading, flat topped	36'	36'	fine	- - -	pink mid-summer	Silktree *Albizzia julibrissima 'rosea'*	long flowering period, soil borne wilt disease in Zone 8
2-8	upright but rounded, branching dense	15'	15'	med.	scarlet	- - -	Amur Maple *Acer ginnala*	has red fruit in mid-summer, extremely hardy, dense growth
5-8	rounded and often mound-like	20'	25'	med.	scarlet	- - -	Japanese Maple *Acer palmatum*	some have red foliage, needs good soil, sun
5-8	rounded and often mound-like	20'	25'	med.	scarlet	- - -	Bloodleaf Japanese Maple *Acer palmatum 'atropurpureum'*	hardy, dark red leaves throughout the growing season
4-8	upright, spreading	25'	20'	med.	red	white	Shadblow or Service-berry *Amelanchier canadensis*	flowers in early May, edible blue fruit, shade tolerant, gray trunk
2-7	pyramidal, pendulous branches in older trees	35'	15'	med.	yellow	- - -	Cutleaf Weeping Birch *Betula pendula 'laciniata'*	short life - 25-30 yrs., susceptible to borers, very graceful tree
5-8	pyramidal when young, round at maturity	30'	25'	med.	yellow	- - -	European Hornbeam *Carpinus betulus*	makes good hedge, very graceful
5-8	upright, becoming vase-shaped	30'	15'	med.	yellow	- - -	Pyramidal European Hornbeam *Carpinus betulas 'fastigiata'*	- - -
4-8	flat top, irregular	25'	25'	med.	yellow	purplish-pink	Eastern Redbud *Cercis canadensis*	tiny pea-like flowers appear in mid-May before leaves

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Trees (8-35')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Name	Comments
4-8	horizontal branching	25'	25'	med.	scarlet	bracts are white or pinkish	Flowering Dogwood Cornus florida	red berries in fall, large flowers in mid-May, foliage is dense and lustrous
5-8	horizontal branching	20'	20'	med.	scarlet	bracts are white or pinkish	Kousa Dogwood Cornus kousa	raspberry-like red berries, large flowers in mid-June, from China
4-8	rounded, dense, shrub-like	20'	20'	med.	red	yellow	Corneliancherry Dogwood Cornus mas	has bluish-black berries, small flowers appear before leaves, flowers in early April
4-7	branches spreading round-headed, dense	20'	20'	small	- - -	bright-scarlet	Paul's Scarlet English Hawthorn Crataegus oxyacantha 'pauli'	scarlet colored fruit in the fall, flowers are double
4-7	broadly columnar, dense branching, eventually has round head	20'	20'	med.	scarlet to orange	white	Washington Hawthorn Crataegus phaenopyrum	interesting year-round, fruit is bright red and effective all winter
2-8	wide spreading, open	25'	30'	med.	- - -	silvery outside, yellow inside	Russian Olive Elaeagnus angustifolia	interesting foliage and fragrant flowers in early June, crooked trunk
6-8	pyramidal habit	30'	15'	large	orange to red	white	Franklinia Franklinia alatamaha	3" blooms in Sept.-Oct., brilliant fall foliage
5-8	flat-topped	25'	35'	med.	- - -	yellow	Goldraintree Koelreuteria paniculata	has yellow fruit in fall, wide range of soils, flowers in early summer

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Trees (8-35')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Name	Comments
5-8	stiffly upright	30'	15'	med.	- - -	yellow - pendulous clusters - May	Laburnum Laburnum vossi	unusual
4-8	pyramidal when young, massive when mature	35'	20'	med.	- - -	white	Kobus Magnolia Magnolia kobus	large white blooms in May, slow growing
5-8	shrub-like with many stems	20'	20'	med.	- - -	white to purple	Saucer Magnolia Magnolia soulangeana	large flowers precede leaves, flowers in April, course textured leaves
5-8	branching dense, mounded to shrub-like	20'	20'	med.	bronze to yellow	white	Star Magnolia Magnolia stellata	large flowers in mid-April, has interesting red fruit, dark green foliage
5-8	grows as a tree in south, as a shrub in north	25'	20'	med.	- - -	cream	Sweetbay Magnolia Magnolia virginiana	flowers over long period, tolerant of wet soils, has red seed pods in fall
4-8	rounded	20'	25'	med.	- - -	red buds, white flowers	Arnold Crabapple Malus arnoldiana	heavy flowering in May, yellow and red fruit, 5/8" in diameter
4-3	mounded, almost shrub-like, dense	20'	20'	med.	- - -	rich carmine	Carmine Crabapple Malus atrosanguinea	flowers in mid-May, dark green, dense foliage
4-8	rounded, densely branched	20'	20'	med.	- - -	crimson	Dorthea Crabapple Malus dorothea	semi-double flowers, blooms every year
4-8	rounded and densely branched	20'	20'	med.	- - -	pink but fades to white	Japanese Flowering Crabapple Malus floribunda	blooms in early May, fruits yellow and red from August to October
5-8	upright, almost vase-shaped, dense	15'	15'	med.	- - -	neyron rose	Hall's Parkman Crabapple Malus halliana 'parkmani'	foliage is dark glossy green, blooms in early May, fruit is dull red

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Trees (8-35')

Hardiness Zones	Form	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Name	Comments
4-8	upright	21'	12'	med.	- - -	white	Hopa Crabapple *Malus hopa*	flowers in May, red fruit
2-8	round-headed, open	15'	15'	med.	- - -	pink	Bechtel Crabapple *Malus ioensis 'plena'*	flowers in late May
4-8	rounded	20'	20'	med.	- - -	red	Eley Purple Crabapple *Malus purpurea 'eleyi'*	dark flowers in May, fruit deep purple
5-8	mounded, dense branching	8'	12'	med.	- - -	pure white	Sargent Crabapple *Malus sargenti*	flowers in mid-May, fruit is dark red, smallest Crabapple
4-8	upright	20'	15'	med.	- - -	pale pink	Scheidecker Crabapple *Malus scheideckeri*	resistant to apple scab, dense foliage
3-7	upright, rounded	25'	25'	med.	purple	pink	"Pink Cloud" Pissard Plum *Prunus cerasifera 'rosea'*	red-purple leaves all season, bright pink flowers in April
5-7	rounded, dense branching	30'	30'	med.	- - -	light pink	Higan Cherry *Prunus subhirtella*	flowers in late April
5-7	pendulous branches	20'	20'	med.	- - -	pale pink	Weeping Higan Cherry *Prunus subhirtella 'pendula'*	most popular of the Higan Cherries
5-7	flat-topped	20'	20'	med.	- - -	pink	Kwazan Cherry *Prunus serrulata*	double-flowered, blooms last a long time
5-7	flat-topped, bushy	35'	35'	med.	- - -	white to pink	Yoshina Cherry *Prunus yedoensis*	should be planted 30 - 40 ft. apart, flowers in late April
2-8	erect while young, spreading and open at maturity	20'	20'	med.	reddish	white	European Mountain Ash *Sorbus aucuparia*	susceptible to borers, fruit bright orange or red clusters, flowers in late May

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Evergreen Trees

Hardiness Zones	Form	Height	Width	Leaf Size	Foliage Color	Soil	Exposure	Name	Comments
4-8	pyramidal, narrow horizontal branching	75'	12'	2"	bluish green	tolerant	sun	White Fir *Abies concolor*	needle-like leaves, withstands heat and drought better than most firs
5-8	narrow to broadly pyramidal	120'	60'	needle-like	dark green	- - -	sun	Cedar of Lebanon *Cedrus libani*	very popular where hardy
3-8	slender to broadly pyramidal	150'	40'	scale-like	blue-green	wet	sun	Sawara False-cypress *Chamaecyparis pisifera*	leaves are scale-like, many horticultural forms
5-8	narrowly pyramidal	150'	30'	needle-like	bluish green	tolerant	sun	Cryptomeria *Cryptomeria japonica*	plume-like branchlets, orange bark, easily grown
5-8	pyramidal	45'	17'	2"	dark green	well drained	sun	American Holly *Ilex opaca*	spiny leaves, brilliant fruit, sexes separate, outstanding ornamental
2-8	pyramidal, dense	20'-90'	12'	scale-like	green	tolerant	sun	Red Cedar *Juniperus virginiana*	grows slowly, several excellent forms including 'burki,' 'canaenti,' 'glauca,' 'pyramidalis,' and others
7-8	pyramidal, broad-leaves, large white blooms	90'	40'	5"-6"	glossy, dark green	- - -	sun	Southern Magnolia *Magnolia grandiflora*	outstanding and popular where hardy
2-8	pyramidal, pendulous branchlets	150'	35'	1"	dark green	- - -	sun	Norway Spruce *Picea abies*	does not mature gracefully - becomes thin at top

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Evergreen Trees

Hardiness Zones	Form	Height	Width	Leaf Size	Foliage Color	Soil	Exposure	Name	Comments
4-8	densely pyramidal, pendulous branching	90'	20'	needle-like	dark green	- - -	sun	Serbian Spruce Picea omorika	needles flat, white undersurface; the best spruce
2-8	nearly columnar, dense	50'	15'	2"	bluish white	- - -	sun	Koster Blue Spruce Picea pungens 'kosteriana'	very popular, very susceptible to spruce gall aphids, old trees lose lower branches
4-8	densely pyramidal, wide spreading	90'	50'	3"-6"	dark green glossy	- - -	sun	Austrian Pine Pinus nigra	fast growing, makes good specimen plant
2-8	stout spreading branches forming pyramidal head	50'	50'	4"-6"	dark green lustrous	tolerant	sun	Red Pine Pinus resinosa	bark is reddish
3-8	rounded or pyramidal	100'	60'	2"-5"	soft green	- - -	sun	White Pine Pinus strobus	has delicate, graceful foliage
2-8	pyramidal when young, round-topped, irregular when old	75'	30'	2"-3"	bluish green	- - -	sun	Scotch Pine Pinus sylvestris	reddish trunk, picturesque when old
7-8	broadly pyramidal	60'	30'	4"	dark green	- - -	sun	Yew Podocarpus Podocarpus macrophyllus	similar to Taxus, but larger needles; popular hedge plant
4-8	densely pyramidal, branching, horizontal	75'	20'	needle-like	bluish green	- - -	sun	Douglas Fir Pseudotsuga taxifolia	often used as Christmas trees, soft needles
3-8	long, slender, horizontal or drooping	75'	50'	needle-like	dark green	- - -	light shade	Canada Hemlock Tsuga canadensis	dense foliage, very graceful trees, may be sheared for large hedge

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Large Deciduous Shrubs (8-30')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
4-8	24'	18'	med.	red	yellow	red	- - -	sun or filtered sun	Cornelian Cherry Cornus mas	rounded to upright form, small but very early flowers
5-8	15'	10'	large	yellow to orange	purplish	- - -	- - -	sun	Smoke Tree Cotinus coggyria	upright habit
3-8	20'	10'	med.	reddish	- - -	brilliant pink	- - -	sun or filtered sun	Aldenham Spindle Tree Euonymus europaeus 'aldenhamensis'	upright, interesting fruit
5-8	30'	15'	large	yellow	yellow	- - -	- - -	sun	Chinese Witch-hazel Hamamelis mollis	rounded form
5-8	15'	10'	med.	- - -	white, pink, red, and blue	- - -	normal	sun	Shrub Althea Hibiscus syriacus	upright form, August flowering
4-8	12'	8'	med.	- - -	pink	- - -	tolerant	sun	Beauty Bush Kolkwitzia amabilis	upright, arching branches, profuse flowering
7-8	12-24'	6-12'	med.	- - -	white, pink, red, lavender	- - -	tolerant	sun	Common Crapemyrtle Lagerstroemia indica	upright, open form, August flowering, very popular
3-8	15'	12'	med.	- - -	white	black	tolerant	sun	Amur Privet Ligustrum amurense	hardier then California Privet, upright, dense
4-8	15'	12'	med.	- - -	white	black	tolerant	sun	European Privet Ligustrum vulgare	rounded-loose form, fragrant flowers, often used as hedges
2-8	15'	15'	med.	- - -	white - changing yellowish	red	tolerant	sun	Amur Honeysuckle Lonicera maacki	flowers in late May, fruit and leaves may remain until Thanksgiving, rounded form

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Large Deciduous Shrubs (8-30')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
3-8	15'	15'	med.	- - -	pink to white	red	tolerant	sun	Tatarian Honeysuckle *Lonicera tatarica*	rounded form, can be planted at the seashore, very popular
5-8	15-30'	10'	large	- - -	white	dark red	- - -	- - -	Sweetbay Magnolia *Magnolia virginiana*	fragrant flowers in late May, evergreen in southeast, upright habit, tree in south
5-8	15'	10'	med.	- - -	purple	- - -	tolerant	sun	Chinese Lilac *Syringa chinensis*	upright form, flowers in mid-May
3-8	12'	8'	med.	red	white	blue	acid	sun	Highbush Blueberry *Vaccinium corymbosum*	rounded form
3-8	15'	8'	med.	red	white	red to black	wet tolerant	sun or filtered sun	Wayfaring Tree Viburnum *Viburnum lantana*	flowers in early June; grows rapidly, upright
2-8	20'	20'	large	purplish red	white	black, purplish red	dry tolerant	sun	Nannyberry Viburnum *Viburnum lentago*	rounded form, excellent fall color; good screen or border plant
3-8	15'	15'	med.	shining red	white	blue, black	tolerant	sun	Blackhaw Viburnum *Viburnum prunifolium*	rounded form, excellent as a specimen or for massing
5-8	12'	12'	med.	- - -	white	black	tolerant	sun	Burkwood Viburnum *Viburnum burkwoodi*	fragrant flowers, somewhat open plant form
4-8	15'	15'	med.	red	silver	red	toler-	sun	Sargent Cranberrybush Viburnum *Viburnum sargenti*	rounded form

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Large Deciduous Shrubs (8-30')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	12'	12'	large	- - -	white	orange	tolerant	sun	Tea Viburnum *Viburnum setigerum*	rounded form, flowers in early July
4-8	25'	25'	large	red	white, red	red	tolerant	sun	Siebold Viburnum *Viburnum sieboldi*	rounded form, flowers in late May, dark green leaves, outstanding as specimen plant
2-8	12'	12'	large	red	white	scarlet	wet	sun	American Cranberrybush Viburnum *Viburnum trilobum*	flowers in late May, edible fruit

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Narrowleaf Evergreen Shrubs (to 15")

Hardiness Zones	Form	Height	Leaf Size	Color	Name	Comments
3-8	compact pyramidal branches slightly pendulous	10'	scale-like	glossy green	Slender Hinoki Falsecypress Chamaecyparis obtusa 'gracilis'	leaves are scale-like, like cypress
4-8	broad, flat-topped, pyramidal	10'	feather-like	- - -	Pfitzer Juniper Juniperus chinensis 'pfitzeriana'	leaves - light, feathery texture
4-8	low, creeping growth	1½'	needle-like	steel blue	Sargent Juniper Juniperus chinensis 'sargenti'	often grown in seashore areas
2-8	low, spreading growth	2'	feather-like	light green - purple in fall	Andorra Juniper Juniperus horizontalis 'plumosa'	- - -
4-8	wide spreading	6'	needle-like	bright blue	Meyer's Juniper Juniperus squamata 'meyeri'	vigorous
4-8	shape varies with variety - some global others prostrate	6'	needle-like	- - -	Mugho Pine Pinus mugo 'mughus'	susceptible to scale
6-8	varies with variety - most are upright	3'	needle-like	- - -	Spreading English Yew Taxus baccata 'repandens'	over 30 varieties have been listed, has red berries in fall
4-8	varies with variety	10'	needle-like	- - -	Spreading Japanese Yew Taxus cuspidata	one of the best narrowleaf evergreens, has red berries in fall
4-8	pyramidal form, horizontal branches	20'	- - -	- - -	Upright Japanese Yew Taxus cuspidata 'capitata'	- - -
4-8	shrub-like growth, spreading branches	3'	needle-like	dull green	Dwarf Japanese Yew Taxus cuspidata 'nana'	leaves are shorter and more dull than the species
4-8	pyramidal with upright branches	10'	needle-like	- - -	Hatfield Yew Taxus media 'hatfieldi'	very popular variety

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Narrowleaf Evergreen Shrubs (to 15")

Hardiness Zones	Form	Height	Leaf Size	Color	Name	Comments
4-8	columnar	12'	needle-like	- - -	Hick's Yew *Taxus media 'hicksi'*	excellent for formal accent
2-8	usually conical in shape	15'	scale-like	- - -	Ware's Arborvitae *Thuja occidentalis 'wareana'*	valued for its fan-like branches rapid growth

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Large Broadleaf Evergreen Shrubs (12-30')

Hardiness Zones	Height	Leaf Size	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
7-8	15'	large (7")	- - -	red	- - -	requires shade	Japanese Aucuba Aucuba japonica	rounded form, dark green glossy leaves, variegated type is popular
5-8	15'	small	- - -	- - -	tolerant	- - -	Common Box Buxus sempervirens	rounded, often used as hedge or specimen plant
7-8	20'	large (4")	white to red	- - -	good	shade tolerant	Common Camellia Camellia japonica	pyramidal
7-8	20'	large (4")	white to red	- - -	good	shade tolerant	Sasanqua Camellia Camellia sasanqua	pyramidal, early flowering
8	15'	med.	- - -	red	- - -	- - -	Evergreen Euonymus Euonymus japonicus	upright to rounded form, excellent as hedge
5-8	20'	med.	- - -	red	good, well-drained	- - -	American Holly Ilex opaca	pyramidal with spiny leaves, slow growing, becomes tree in southern range
6-8	20'	large (4")	- - -	black	- - -	sun	Sweetbay Laurel Laurel nobilis	pyramidal, often sheared
6-7	18'	large (4-6")	white	black	- - -	sun	Common Laurel Cherry Prunus laurocerasus	rounded, popular for hedges
3-8	15'	large	rose to purplish-pink	- - -	- - -	requires partial shade	Rose Bay Rhododendron Rhododendron maximum	rounded, irregular form, large dark green leaves
7-8	30'	large (8")	white	red	well-drained	sun	Chinese Photinia Photinia serrutata	vigorous shrub, brilliant red young leaves, leggy unless occasionally pruned
5-8	12'	large (4-6")	white	red to black	- - -	sun	Leatherleaf Viburnum Viburnum rhytidophyllum	upright, evergreen in south

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Deciduous Shrubs (6-10')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
4-8	9'	9'	med.	- - -	- - -	- - -	tolerant	sun or shade	Acanthopanax *Acanthopanax sieboldianus*	very tolerant of shade and polluted air
5-8	7'	7'	small	- - -	yellow	red	tolerant	sun	Mentor Barberry *Berberis mentorensis*	rounded form, thorny, semi-evergreen
5-8	7'	7'	small	scarlet	yellow	dk. red	tolerant	sun	Japanese Barberry *Berberis thunbergi* (*B. t.'purpurea'* has red leaves)	rounded or columnar forms, colorful fruit and autumn foliage
4-8	6'	8'	med.	- - -	white to red	green	tolerant	sun	Flowering Quince *Chaenomeles lagenaria*	rounded form, many varieties
2-8	7'	7'	med.	reddish	white	white	moist	sun	Red Osier Dogwood *Cornus stolonifera*	loose-rounded, valued for its highly colored red winter twigs; there is a yellow-twigged form
5-8	6'	10'	small	dull red	pink	red	tolerant	sun	Spreading Cotoneaster *Cotoneaster divaricata*	arching spreading growth, semi-evergreen, bright red berries
4-8	9'	9'	small	- - -	pinkish	black	tolerant	sun	Hedge Cotoneaster *Cotoneaster lucida*	dense, rounded form, lustrous green foliage, susceptible to fire blight
5-8	8'	8'	med.	- - -	white	- - -	tolerant	sun	Snow-flake Deutzia *Deutzia scabra 'candidissima'*	arching form, flowers in late June
3-8	10'	10'	med.	scarlet	- - -	scarlet	tolerant	sun	Winged Euonymus *Euonymus alata*	rounded form, of particular interest because of winged horizontal branches

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Deciduous Shrubs (6-10')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	9'	9'	med.	- - -	deep yellow	- - -	tolerant	sun	Forsythia, "Lynwood Gold," "Spring Glory," "Beatrix Farrand" Forsythia intermedia 'spectabilis'	upright growth, yellow flowers in mid-April
4-8	10'	10'	large	yellow	yellow	- - -	wet	sun or filtered sun	Vernal Witch-hazel Hamamelis vernalis	open, spreading form, blooms very early--sometimes January or February
6-8	8'	6'	large	- - -	blue or pink	- - -	good	sun	French Hydrangea Hydrangea macrophylla 'hortensia'	rounded form, 6-10" round flower heads in August
3-8	9'	9'	med.	yellow	- - -	bright red	any good soil	sun or filtered sun	Winterberry Holly Ilex verticillata	berries remain to January
5-8	7' (3-10')	3-10'	small	- - -	bright yellow	- - -	tolerant	sun	Winter Jasmine Jasminum nudiflorum	rounded habit, pendulous branches, needs frequent pruning, early April flowering
4-8	5'	5'	med.	- - -	yellow	- - -	tolerant	sun	Kerria Kerria japonica 'pleniflora'	upright branches, ball-shapped flowers in mid-May, has green twigs all winter, much dead wood
4-8	10'	10'	med.	reddish	pink	brown	tolerant	sun	Beauty-bush Kolkwitzia amabilis	ornamental in spring, summer and winter; upright, arching
3-8	6'	6'	med.	russet purplish	white	black	tolerant	sun	Regel Privet Ligustrum obtusifolium 'regelianum'	branches almost horizontal, rounded form

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Deciduous Shrubs (6-10')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	8'	8'	med.	- - -	white	red	tolerant	sun	Winter Honeysuckle *Lonicera fragrantissima*	rounded form, stiff, leathery, half evergreen leaves, fragrant flowers in March
5-8	10'	10'	med.	blue to gray-green	rose	red	tolerant	sun or filtered sun	Blueleaf Honeysuckle *Lonicera korolkowi*	rounded form, outstanding chiefly for its blue to gray-green foliage color
2-8	9'	9'	med.	- - -	- - -	gray	sandy soils	sun or filtered sun	Northern Bayberry *Myrica pennsylvanica*	upright, loose form, aromatic semi-evergreen leaves
5-8	6'	6'	med.	- - -	white	- - -	tolerant	sun	Avalanche Mockorange *Philadelphus lemoine 'avalanche'*	upright habit, splendid arching branches, fragrant flowers
5-8	6'	6'	med.	- - -	white	- - -	tolerant	sun	Albatre Mockorange *Philadelphus virginalis 'albatre'*	arching branches, fragrant, double flowers
5-8	9'	9'	med.	- - -	white	- - -	tolerant	sun	Virginal Mockorange *Philadelphus virginalis 'virginal'*	poor specimen plant; it is devoid of lower branches
5-8	9'	8'	large	yellow	yellow, orange, scarlet	- - -	acid, moist	sun or filtered sun	Flame Azalea *Rhododendron calendulaceum*	upright habit, very colorful flowers in early June
4-8	6'	6'	med.	yellow to crimson	pale rosy-purple	- - -	acid, moist	sun or filtered sun	Korean Rhodendron *Rhodendron mucronulatum*	upright, blooms in mid-April
4-8	10'	10'	large	yellow, orange, crimson	rose pink	- - -	acid, moist	filtered sun	Royal Azalea *Rhododendron schlippenbachi*	rounded habit, large flowers and colorful autumn foliage
5-8	6'	6'	med.	- - -	white	black	tolerant	sun or filtered	Jetbead *Rhodotypos scandens*	rounded habit, interesting because black berries remain in winter

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Deciduous Shrubs (6-10')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	7'	7'	small	- - -	canary yellow	dark scarlet	tolerant	sun	Father Hugo Rose Rosa hugonis	rounded, arching habit, blooms in late May
2-8	5'	5'	med.	orange	pink to white	brick red	tolerant	sun	Rugosa Rose Rosa rugosa	upright, vigorous grows well on seashore, several varieties available
4-8	7'	7'	med.	red to orange	white	- - -	tolerant	sun	Bridalwreath Spirea Spiraea prunifolia 'plena'	arching habit, numerous very small flowers, blooms in mid-May
4-8	7'	7'	med.	orange to red	pure white	brown	tolerant	sun	Van Houtte Spirea Spiraea vanheuttei	profuse white flower clusters, arching habit, twiggy, untidy seed heads
3-8	6'	6'	small	- - -	pink	white	tolerant	sun	Snowberry Symphoricarpos albus 'laevigatus'	upright, arching, white berries in fall
5-8	6'	6'	med.	- - -	lilac	- - -	tolerant	sun	Persian Lilac Syringa persica	flowering - heavy, upright, rounded form
5-8	9'	9'	med.	russet red	white	bright red	tolerant	sun	Linden Viburnum Viburnum dilatatum	rounded form, flowers are clustered, flowers in early June, dense compact growth
4-8	10'	10'	med.	- - -	white	- - -	tolerant	sun	Japanese Snowball Viburnum tomentosum 'sterile'	horizontal branches, heavy flowering in May
4-8	5'	5'	med.	reddish	white or pink	black	tolerant	sun	Koreanspice Viburnum Viburnum carlesi	dense rounded form, flowers in mid-May, flowers are clustered; susceptible to graft disease

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Broadleaf Evergreen Shrubs (6-12')

Hardiness Zones	Height	Width	Leaf Size	Flower Color & Time	Fruit Color	Soil	Exposure	Name	Form and Comments
7-8	6-10'	6'	7"	- - -	bright red	- - -	shade	Japanese Aucuba Aucuba japonica	rounded form, dioecious
5-8	6'	6'	3" med.	yellow mid-May	bluish black	- - -	shade tolerant	Wintergreen Barberry Berberis julianae	rounded form year-round interest, dense growing - hardiest evergreen barberry
7-8	12'	12'	2-4"	silvery white	red berries	tolerant	sun	Thorny Eleagnus Eleagnus pungens	rounded form, very fragrant flowers, popular plant
8	12'	- - -	1-3"	- - -	pink to orange	- - -	- - -	Evergreen Euonymus Euonymus japonica	rounded - upright, widely used
6-8	8'	8'	2-3" med.	- - -	pinkish to red	- - -	- - -	Spreading Euonymus Euonymus kiautschovica	rounded form, widely used
7-8	9'	9'	3"	- - -	bright red	tolerant	sun	Burford Chinese Holly Ilex cornuta 'burfordi'	rounded habit, shiny leaves with spines, fruit well retained
6-8	8'	16'	small	- - -	black	- - -	- - -	Convex Japanese Holly Ilex crenata 'convexa'	often twice as broad as high, dense, broad spreading
5-8	10'	8'	5" large	pink and white - mid-June	- - -	requires acid soil	- - -	Mountainlaurel Kalmia latifolia	rounded form, often used in foundation planting
7-8	9-18'	6'	4"	white - mid-July	black	- - -	- - -	Japanese Privet Ligustrum japonica	rounded, often used as a hedge
7-8	8'	8'	- - -	white - late July	bright red	tolerant	sun	Nandina Nandina domesticum	upright habit, none-branching stems, bright red leaves in fall
6-8	7'	4'	3½" large	white - mid-April	- - -	requires acid soil	full sun to semi-shade	Japanese Pieris Pieris japonica	flowers in pendulous clusters to 5" long, lustrous dark green foliage, dense, upright

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Medium Broadleaf Evergreen Shrubs (6-12')

Hardiness Zones	Height	Width	Leaf Size	Flower Color & Time	Fruit Color	Soil	Exposure	Name	Form and Comments
5-7	18'	9'	4-6"	white - late May	black	- - -	- - -	Cherry Laurel Prunus laurocerasus 'schipkaensis'	rounded, often used as a hedge
6-8	7'	8'	1½"	white	bright red berries	tolerant	sun	Laland Firethorn Pyracantha coccinea 'lalandi'	berries provide vivid winter color - difficult to transplant, rounded form
5-8	8'	8'	large up to 6"	light pink	red to black	rich - well-drained	semi-shade	Leatherleaf Viburnum Viburnum rhytidophyllum	rounded form, dioecious, interesting foliage upright habit

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Shrubs (to 5')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	4'	4'	small	scarlet	yellow, reddish outside	bright red	tolerant	sun	Purple Box Barberry *Berberis thunbergi* *'minor'*	rounded form, purple leaves
4-8	3'	4'	med.	- - -	red	green	tolerant	sun	Japanese Quince *Chaenameles japonica*	spreading form, May flowering, low, dense
4-8	3'	5'	small	reddish	pinkish	red	tolerant	sun	Rock Cotoneaster *Cotoneaster horizontalis*	mid-June flowering, flat horizontal branches, semi-evergreen
4-8	4'	4'	med.	- - -	white	- - -	tolerant	sun	Slender Deutzia *Deutizia gracilis*	late May-flowering, dense, compact, arching branches
3-8	5'	5'	med.	scarlet	- - -	scarlet	- - -	sun	Dwarf Winged Euonymus *Euonymus alata* *'compactu'*	rounded form, horizontal branches, provides excellent fall color
4-8	3'	3'	large	- - -	white, ball-shaped clusters	- - -	tolerant	sun	Hills of Snow *Hydrangea arboresceus* *'grandiflora'*	rounded, compact plant, conspicuous flowers, popular
5-8	5'	5'	very large	reddish	white	- - -	tolerant	sun or filtered sun	Oak-leaved Hydrangea *Hydrangea guercifolia*	irregular, dense mid-July flowering
4-8	3'	3'	small	- - -	bright yellow	- - -	tolerant	sun	Shrubby St. Johnsworth *Hypericum prolificum*	dense, mounded growth, covered with continuous blooms for several weeks at a time
5-8	5'	5'	large	- - -	white, yellow, pink, red, lavender	- - -	good - well-drained	sun, no wind	Tree Peony *Paeonia suffruticosa*	rounded habit, very large silky flowers

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Deciduous Shrubs (to 5')

Hardiness Zones	Height	Width	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
2-8	4'	4'	small	- - -	yellow	- - -	tolerant	sun	Bush Cinquefoil Potentilla fruticosa	rounded form, some flower all summer
4-8	4'	4'	med.	- - -	pink, double	- - -	good	sun	Dwarf Flowering Almond Prunus glandulosa	rounded - loose form, grown for flowers
5	5'	5'	med.	- - -	yellow, orange, red	- - -	acid	filtered sun	Mollis Azalea Rhododendron hybrid	upright habit, outstanding flowers in May
2-8	3'	3'	small	- - -	- - -	- - -	tolerant	sun	Arctic Willow Salix purpurea 'nana'	dense rounded form, excellent as a hedge, blue-gray foliage
5-8	2'	2'	med.	- - -	pink	- - -	tolerant	sun	Bumalda Spirea Spirea bumalda 'Anthony Waterer'	rounded plant, profuse flowering in late June
3-8	2'	2'	med.	red	- - -	- - -	tolerant	sun or light shade	Dwarf European Cranberrybush Viburnum opulus 'nanum'	rounded form, excellent as low hedge
4-8	5'	5'	med.	- - -	red	- - -	tolerant	sun	Weigela Weigela 'Bristol Ruby'	irregular form, flowers in May and mid-summer

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Broadleaf Evergreen Shrubs (to 6')

Hardiness Zones	Height	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	3-5'	1½"	- - -	pink	- - -	- - -	- - -	Glossy Abelia *Abelia grandiflora*	rounded form, glossy, nearly evergreen leaves, small blooms in clusters - June to frost
5-8	6'	3"	- - -	yellow	blue-black	- - -	- - -	Wintergreen Barberry *Berberis julianae*	dense, rounded form
5-8	5'	2"	- - -	white - tinged with red	blue-black	- - -	- - -	Three Spine Barberry *Berberis triacanthophora*	one of the most hardy Berberries, upright, evergreen
5-8	4'	1"	bronze	golden yellow	violet-black	- - -	- - -	Warty Barberry *Berberis verruculosa*	neat, compact growth; interesting leathery foliage, rounded form
5-8	4'	1"	- - -	- - -	- - -	- - -	- - -	Korean Littleleaf Box *Buxus microphylla 'koreana'*	most hardy of the species; grown for compact, dense, rounded form
5-8	5'	2"	- - -	yellow	- - -	tolerant	sun	Warminster Broom *Cytisus praecox*	rounded - loose habit, prolific flowering
4-8	6"	1"	- - -	pink	- - -	alkaline, well-drained	sun	Rose Daphne *Daphne cneorum*	dense, compact form, to 24" wide, abundant fragrant flowers in May
5-8	5'	1"	- - -	pink	- - -	alkaline, well-drained	sun	Somerset Daphne *Daphne 'somerset'*	upright habit (4' wide) abundant pink flowers in May-June

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Broadleaf Evergreen Shrubs (to 6')

Hardiness Zones	Height	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	4'	1-2"	- - -	- - -	orange	- - -	- - -	Bigleaf Wintercreeper Euonymus Euonymus fortunei 'vegetus'	rounded form, also thick leathery leaves
5-8	12"	1"	- - -	white	- - -	well-drained	sun or light shade	Evergreen Candytuft Iberis sempervirens	rounded form, abundant flowers in May
6-8	4'	3/4"	- - -	- - -	black	- - -	- - -	Convexleaf Holly Ilex crenata 'convexa'	rounded form, lustrous dark-green foliage
4-8	3-6'	7"	bronze	white, drooping	- - -	acid	light shade	Drooping Leucothoe Leucothoe catesbaei	rounded form, drooping branches, best in border plantings
7-8	6'	1/2"	- - -	white	blue-purple	tolerant	sun	Box Honeysuckle Lonicera nitida	rounded habit, compact, often used as hedges
5-8	4'	- - -	bronze to purplish	bright yellow	bluish-black	- - -	light shade	Oregongrape Mahonia Mahonia aquifolia	rounded-irregular form, holly-like lustrous leaves, flowers in early May
4-8	6'	3½"	- - -	white	- - -	tolerant	light shade	Mountain Pieris Pieris floribunda	upright, dense form, flowers in late April
5-8	5'	3"	- - -	pale rosy purple	- - -	acid	light shade	Carolina Rhododendron Rhododendron carolinianum	very interesting flowers and foliage, rounded form
4-8	6'	5"	- - -	lilac-purple	- - -	acid	light shade	Catawba Rhododendron Rhododendron catawbiense	spreading, flowers appear in early June

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Small Broadleaf Evergreen Shrubs (to 6')

Hardiness Zones	Height	Leaf Size	Fall Leaf Color	Flower Color	Fruit Color	Soil	Exposure	Name	Form and Comments
5-8	6'	- - -	- - -	vary widely	- - -	slightly acid	partial shade	Hybrid Azaleas *Rhododendron hybrids*	rounded form, brilliant colors; vary in degree of hardiness
4-8	6'	5"	- - -	white, pink rose, red, lavender, purple	- - -	acid	light shade	Hybrid Rhododendrons *Rhododendron hybrids*	rounded form, slow growing - eventually large shrubs
6-8	3'	- - -	- - -	white	- - -	slightly acid	partial shade	Snow Azalea *Rhododendron mucronatum*	densely branching, hardy below Long Island
6-8	3'	3/4"	reddish	rich magneta	- - -	slightly acid	partial shade	Amoena Azalea *Rhododendron obtusa 'amoena'*	rounded form, nearly deciduous in New England flowers in mid-May
6-8	4'	3/4"	reddish	salmon to brick-red	- - -	slightly acid	partial shade	Torch Azalea *Rhododendron obtusa 'kaempferi'*	upright habit, brilliant flowers in May, nearly evergreen
5-8	4'	- - -	- - -	petunia purple	- - -	slightly acid	partial shade	Korean Yodogawa Azalea *Rhododendron yedoensis 'poukhanensis'*	like the species except more compact, rounded form
7-8	3'	3-4"	- - -	- - -	red	- - -	- - -	Fragrant Sarcococca *Sarcococca ruscifolia*	upright habit, dark lustrous foliage
7-8	1½'	4"	- - -	white	bright red	tolerant	shade *only*	Reeves Skimmia *Skimmia reevesiana*	rounded, compact, sexes separate, popular

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Deciduous and Evergreen Vines

Hardiness Zones	Height	Type	Leaf Size	Fall Leaf Color	Flower Color	Soil	Exposure	Name	Comments
(D) 4-8	35'	twining	med.	- - -	purple	tolerant	sun or shade	Five-leaf Akebia Akebia quinata	semi-evergreen, rapid growing
(D) 4-8	25'	tendrils	med.	- - -	- - -	tolerant	sun	Porcelain Ampelopsis Ampelopsis brevipedumculata 'maximowiczi'	colorful berries change from pale lilac to yellow to blue
(E) 6-8	60'	tendrils	large	- - -	orange-red	tolerant	sun	Cross Vine Bignonia capreolata	profuse flowering, good screen
(D) 4-8	30'	clinging vine	large	- - -	orange to scarlet	tolerant	sun	Trumpet Creeper Campsis tagliabuana 'Madame Galen'	large flowers in mid-July, needs some support
(D) 2-8	20'	twining	med.	yellow	- - -	tolerant	sun	American Bittersweet Celastrus scandens	red and orange berries on female plants in fall and winter
(D) 5-8	20'	tendrils	med.	- - -	various	alkaline	light	Clematis Clematis hybrids	large white, pink, lavender, purple blooms
(D) 5-8	30'	tendrils	med.	- - -	white	tolerant	sun	Sweet Autumn Clematis Clematis paniculata	abundant flowers in August, plumy seed heads in fall, dense lustrous leaves
(E) 5-8	25'	clinging vine	med.	- - -	- - -	tolerant	sun or shade	Bigleaf Wintercreeper Euonymus fortunei 'vegetus'	one of several forms of E. fortunei that are very useful; all subject to scale which may be difficult to control

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Deciduous and Evergreen Vines

Hardiness Zones	Height	Type	Leaf Size	Fall Leaf Color	Flower Color	Soil	Exposure	Name	Comments
(E) 7-8	12'	clinging vine	large	- - -	- - -	tolerant	sun or shade	Algerian Ivy *Hedera canariensis*	"Canary Queen" a popular variegated form
(E) 5-8	90'	clinging vine	large	- - -	- - -	tolerant	sun or shade	English Ivy *Hedera helix* '*Baltic*'	excellent in north and south, there are numerous forms, all less hardy than "Baltic." Old plants have green flowers and black fruits
(D) 4	75'	clinging vine	large	- - -	white	tolerant	light shade	Climbing Hydrangea *Hydrangea petiolaris*	large flower heads in mid-June, dark shiny leaves, slow growing
(D) 7-8	30'	semi-climbing	med.	- - -	white	tolerant	sun or light shade	Common White Jasmine *Jasminum officinale*	very fragrant flowers, semi-evergreen
(D) 4-8	20'	twining vine	med.	- - -	yellowish red to purplish red	tolerant	sun	Henry Honeysuckle *Lonicera henryi*	half evergreen
(E) 3-8	50'	twining vine	- - -	- - -	orange to scarlet	- - -	- - -	Trumpet Honeysuckle *Lonicera sempervirens*	evergreen, not rampant
(D) 4-8	15'	clinging vine	small	scarlet	- - -	tolerant	sun	Low's Japanese Creeper *Parthenocissus tricuspidata* '*lowi*'	apple green leaves similar to 'veitchi'
(D) 4-8	15'	clinging vine	small	scarlet	- - -	tolerant	sun	Veitch Japanese Creeper *Parthenocissus tricuspidata* '*veitchi*'	leaves purple when young, excellent for "tracery" effect on walls

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Deciduous and Evergreen Vines

Hardiness Zones	Height	Type	Leaf Size	Fall Leaf Color	Flower Color	Soil	Exposure	Name	Comments
(D) 8	30'	tendrils	large	- - -	white to blue	good	sun	Passion Flower Passiflora caerulea	very popular, semi-evergreen
(D) 4-8	90'	twining vine	med.	yellow	violet, white, pink	tolerant	sun	Japanese Wisteria Wisteria floribunda	pea-like flowers in pendulous racemes 12-36" long, in late May, needs frequent pruning
(D) 5	90'	twining vine	- - -	- - -	blue-violet	- - -	- - -	Chinese Wisteria Wisteria sinensis	flowers in 12" racemes mid-May, needs frequent pruning

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Deciduous and Evergreen Ground Covers

Hardiness Zones	Height	Leaf Size	Soil	Exposure	Name	Comments
(D) 3-8	8"	med.	any	sun or shade	Goutweed *Aegopodium podograria* '*variegatum*'	cream and green foliage; useful in difficult situations; but invasive
(D) 4-8	8"	med.	any	sun or shade	Carpet Bugle *Ajuga reptans*	green, bronze, red, and variegated leaf forms available, blue flowers, useful in difficult situations, but invasive
(D) 4-8	8"	fine	good	light to heavy shade	Sweet Woodruff *Asperula odorata*	spreads rapidly, white flowers, tolerates very dense shade
(E) 4-8	4-24"	fine	acid, moist, low fertility	light shade	Scotch Heather *Calluna vulgaris*	head back in late winter to hold compact form, colors: white through red, flowers during fall, winter and early spring
(D) 2-8	8"	large	any	light shade to sun	Lily-of-the-Valley *Convallaria majalis*	spreads rapidly in good soil, white flowers in May, poor foliage color in autumn
(D) 4-8	1½-3'	med.	good	sun	Rock Cotoneaster *Cotoneaster horizontalis*	mounded form, evergreen in south, red fruit into winter
(E) 5-8	8"	large	good	partial shade	English Ivy *Hedera helix* '*Baltic*'	rapid growing evergreen - also a vine, 'baltica' more cold tolerant than other selections
(E) 4-8	12"	needle-like	any	sun	Sargent Chinese Juniper *Juniperus chinensis* '*sargenti*'	dense mat forming, steel blue color, seaside plant
(E) 2-8	12-18"	needle-like	any	sun	Creeping Juniper *Juniperus horizontalis*	Waukegan Juniper (*J. h.* '*douglasi*') dense, trouble free, steel blue color Andora Juniper (*J. h.* '*plumosa*') dense, trouble free, feathery blue-green in summer purplish in winter

SELECTED LANDSCAPE PLANTS, ZONES 2-8

Deciduous and Evergreen Ground Covers

Hardiness Zones	Height	Leaf Size	Soil	Exposure	Name	Comments
(D) 4-8	24"	med.	any	sun	Henry Honeysuckle *Lonicera henryi*	half evergreen climbing vine with yellowish red to purplish flowers, excellent on banks clear of shrubs and trees which it will climb
(E) 5-8	12"	needle-like	acid	sun or shade	Canby Pachistema *Pachistema canbyi*	dense growth, flat 1" needle leaves, requires acid soil, good drainage
(E) 4-8	6"	large	any	shade	Japanese Spurge *Pachysandra terminalis*	dense, trouble free, popular, it grows best in light to heavy shade, the color becomes an attractive yellowish-green in full sun
(E) 7-8	18"	med.	tolerant	sun	Chilean Pernettya *Pernettya mucronata*	popular in mid-south, becomes straggly in shade, white, pink, red, violet, ½" persistent fruit of particular interest
(D) 5-8	12"	med.	tolerant	sun	Memorial Rose *Rosa wichuriana*	semi-evergreen, vigorous, effective white flowers, especially good for erosion control on banks
(D) 2-8	8"	med.	acid	sun	Smoothleaf Lowbush Blueberry *Vaccinium augustifolium* '*laevifolium*'	especially good for acid, rocky, low-fertility soils
(E) 4-8	6"	med.	any	sun or shade	Myrtle, Periwinkle *Vinca minor*	persistent, trouble free, attractive blue, white, or purple flowers, often used for erosion control on banks, very popular

SELECTED LANDSCAPE PLANTS

Garden Flowers, Herbaceous Perennials

Height	Months in Bloom	Flower Color	Soil	Exposure	Spacing	Name	Comments
med.	September	pink	medium	filtered sun, no wind	12"	Grapeleaf Anemone *Anemone vitifolia*	good companion for lilies, self-sows, but not rampant
med.	July	orange	well-drained	sun	18"	Butterfly Weed *Asclepias tuberosa*	permanent, difficult to transplant
med.	June	white, pink, red	wet	filtered sun	18"	Astilbe *Astilbe hybrids*	plume-shaped flower spikes, sensitive to drying, tolerant of wet soil
med.	June to July	white	medium	sun	18"	Shasta Daisy *Chrysanthemum maximum*	must be reset every 2 years or dies out
med.	August to October	many, but no blue	medium	sun	18"	Florists Chrysanthemum *Chrysanthemum morifolium*	tall kinds require staking, pinch to July 1 for compact habit, reset every year
tall	July to September	white, blue, violet	well-drained	sun, no wind	18"	Delphinium *Delphinium hybrid* esp. *D. belladonna h.*	usually requires staking
tall	May	rose	medium	filtered sun	24"	Common Bleedingheart *Dicentra spectabilis*	permanent, resents disturbance, foliage gone after July
med	June	pink, white	medium	sun	24"	Gas Plant Dittany *Dictamnus fraxinella*	permanent, resents disturbance, blooms give off ignitable gas
tall	June to October	blue	medium	sun	24"	Small Globethistle *Echinops ritro* esp. '*Taplow Blue*"	spherical blooms, reset every 2-3 years

SELECTED LANDSCAPE PLANTS

Garden Flowers, Herbaceous Perennials

Height	Months in Bloom	Flower Color	Soil	Exposure	Spacing	Name	Comments
tall or med.	May to October	yellow, orange, pink, mahogany	tolerant	sun	24"	Daylily Hemerocallis hybrids	hundreds of named cultivars, flowering period varies with cultivar and age, some are night-flowering, reset every 3-4 years
med.	June to October	red	medium	sun or filtered sun	12"	Coral Bells Heuchera sanguinea	foliage only 6" high, good cut flower, reset every 2-3 years
tall	August to September	white, rose, red	wet	sun	36"	Rosemallow Hibiscus moscheutos	late and slow spring growth, large blooms, tolerates very wet soil
short	May	white	medium	sun	12"	Evergreen Candytuft Iberis sempervirens	permanent, old plants may require reshaping
med.	July	orange	well-drained	sun	18"	Sword Torchlily Kniphofia foliosa	permanent
short	June to August	lavender	medium	sun	12"	True Lavender Lavendula vera esp. 'Munstead'	permanent, may be sheared for dwarf
tall	August to September	red	wet	filtered sun	18"	Cardinal Flower Lobelia cardinalis	permanent, brilliant flowers, thrives in wet soil
tall	July to September	pink	wet	sun	18"	Loose Strife Lythrum superbum	named cultivars are better than species, may be grown in shallow water

SELECTED LANDSCAPE PLANTS

Garden Flowers, Herbaceous Perennials

Height	Months in Bloom	Flower Color	Soil	Exposure	Spacing	Name	Comments
med.	June	white, pink, red	medium	sun	36"	Peony *Paeonia* *hybrids*	resents disturbance, brown foliage in fall should be removed and burned to prevent bud blight
med.	June to July	white, orange, red	tolerant	sun	24"	Oriental Poppy *Papaver* *orientale*	permanent, very large blooms, foliage dies after July, can be reset *only* in August
med.	July to August	white, pink	medium	sun	12"	Summer Phlox *Phlox* *paniculata*	remove old flower heads of inferior seedlings will replace cultivar, reset every 2 years
med.	June	yellow, gold	medium	sun	18"	Globeflower *Trollius* *europaeus*	permanent, blooms resemble giant buttercup

SELECTED LANDSCAPE PLANTS

Garden Flowers, Herbaceous Annuals

Height	Months in Bloom	Flower Color	Soil	Exposure	Spacing	Name	Comments
tall, med., or short	July to October	all except blue	medium	sun	9-12"	Common Snapdragon *Antirrhinum majus*	height depends on cultivar, good cut flower
med.	July to October	foliage, all except blue and lavender	medium	filtered sun	9"	Common Coleus *Coleus blumei*	grown for interesting foliage colors
short	July to October	all except blue	medium	filtered sun or sun	9"	Sultan Snapweed *Impatiens sultani*	outstanding for shade, will flower well as a house plant
med.	June to October	white, pink, red	medium	sun	9"	Fish Pelargonium *Pelargonium hortorum*	very popular
short	June to October	all colors	tolerant	filtered sun or sun	9"	Petunia *Petunia hybrid*	most popular annual; cut to 6" and fertilize in August for good fall flowering
tall, med., or short	June to October	red	tolerant	filtered sun or sun	12-24"	Scarlet Sage *Salvia splendens*	height depends on cultivar, brilliant color
tall, med., or short	July to October	yellow, orange, and mahogany	tolerant	sun	9-12"	Aztec Marigold *Tagetes erecta*	height depends on cultivar, very popular

SELECTED LANDSCAPE PLANTS

Garden Flowers, Bulbs

Height	Months in Bloom	Flower Color	Soil	Exposure	Spacing	Planting Depth	Name	Comments
short	September	lavender	tolerant	sun	12"	6"	"Autumn Crocus" *Colchicum autumnale*	permanent not a true crocus
short	April	white, blue, lavender and yellow	well-drained	sun, filtered sun	4"	4"	Crocus *Crocus species*	foliage must ripen for flowers after first year, corms eaten by rodents
tall	July	white	well-drained	sun	18"	6"	Madonna Lily *Lilium candidum*	very fragrant, spray with captan in spring to prevent Botrytis
tall	September	pink	well-drained	sun	12"	9"	Rubrum Lily *Lilium speciosum 'rubrum'*	requires staking
short	May	blue	tolerant	sun, filtered sun	4"	4"	Armenian Grape Hyacinth *Muscari armeniacum*	permanent, foliage remains all year
med.	April to May	yellow, white	tolerant	filtered	6"	6-9"	Daffodil *Narcissus pseudonarcisus*	foliage must ripen for good flowering next season, may be used in woodlands
short	April to May	blue	tolerant	sun, filtered sun	4"	4"	Siberian Squill *Scilla siberica*	cultivar "Spring Beauty" is best, permanent, may be planted close to deciduous shrubs
med.	May	all	well-drained	filtered sun	6"	6-9"	Tulip *Tulipa hybrid*	foliage must ripen for good flowering next season, lift only once in 3 years, permanence depends on cultivar

APPENDIX D

Addresses for Agricultural Extension Publication Services

MAILING ROOM
Agricultural Extension Service
Agricultural and Home Economics
Experiment Station and Cooperative
Extension Service
Iowa State University of Science and
Technology
Ames, Iowa 50010

Agricultural Extension Service
MSU Bulletin Office
P. O. Box 231
East Lansing, Michigan 48823

Extension Director
College of Agriculture
University of Connecticut
Storrs, Connecticut 06268

MAILING ROOM
Agricultural Extension Service
Agricultural Hall
University of Delaware
Newark, Delaware 19711

Cooperative Extension Director
Agricultural Extension Service
University of Maine
Orono, Maine 04473

Extension Director
Agricultural Extension Service
University of Maryland
College Park, Maryland 20740

Extension Director
Agricultural Extension Service
University of Massachusetts
Amherst, Massachusetts 01002

Cooperative Extension Director
Agricultural Extension Service
Thompson Hall
University of New Hampshire
Durham, New Hampshire 08324

Associate Director
Agricultural Extension Service
College of Agriculture
Rutgers University
New Brunswick, New Jersey 08900

MAILING ROOM
Agricultural Extension Service
Stone Hall
Cornell University
Ithaca, New York 14850

Extension Director
102 Armsby Building
The Pennsylvania State University
University Park, Pa. 16802

Ag. Editor's Office
16 Woodward Hall
University of Rhode Island
Kingston, Rhode Island 02836

Extension Service Director
Agricultural Extension Service
Morrill Hall
University of Vermont
Burlington, Vermont 05401

Office of Information
U. S. Department of Agriculture
Washington, D. C. 20250

The Pennsylvania State University
College of Agriculture
Department of Agricultural Education
University Park, Pennsylvania

LANDSCAPE DESIGN

DIRECTIONS: Do not write on this test booklet. Use the separate answer sheet. Blacken out the letter of the most appropriate answer for each question.

1. In planning circular drives one should keep in mind that the outside wheels of a car in a tight turn trace a circle about:
   a. fifteen feet in diameter
   b. thirty feet in diameter
   c. forty-five feet in diameter
   d. sixty feet in diameter
2. The structural plan:
   a. gives detail plans for constructing steps, walks, drives, etc.
   b. gives the location of plant beds, trees, flower beds, etc.
   c. is concerned mainly with the location of rock formations, soil type, slope, etc.
   d. shows the location of walks, drives, steps, fences, etc.
3. The focal point of the front of the home should be:
   a. the front door
   b. the carport
   c. the picture window
   d. the front drive
4. The lines of the home may be softened by:
   a. increasing the slope of the lawn
   b. adding a carport
   c. planting trees near the home
   d. adding metal fencing
5. A ground cover is often used between the lawn and shrubbery. Which principle of design does this illustrate:
   a. balance
   b. rhythm
   c. repetition
   d. unity
6. Trees planted at the rear of the home often enhance the beauty of the home. Which principle of design does this best illustrate:
   a. balance
   b. rhythm
   c. repetition
   d. unity

7. Broad leaved deciduous trees provide summer shade. They should be planted:
   a. twenty feet southwest of the area where shade is needed
   b. twenty feet northwest of the area where shade is needed
   c. twenty feet southeast of the area where shade is needed
   d. twenty-five feet northeast of the area where shade is needed
8. Standard trees should be planted no closer than:
   a. twenty to forty feet apart
   b. forty to sixty feet apart
   c. sixty to eighty feet apart
   d. eighty to one hundred feet apart
9. When grouped but not used as hedges, shrubs are usually spaced at a distance equal to:
   a. one-half their mature height
   b. one-half their mature width
   c. their mature height
   d. their mature width
10. The use of both deciduous and evergreen materials is usually desirable. A good proportion is:
   a. one-fourth evergreen to three-fourths deciduous
   b. one-half evergreen to one-half deciduous
   c. one-third evergreen to two-thirds deciduous
   d. two-thirds evergreen to one-third deciduous
11. The repetition of small groups of a species within a bed, or several beds close together creates:
   a. balance
   b. rhythm
   c. harmony
   d. accent
12. It is good landscape practice to:
   a. place the taller growing plants in the forefront of a planting
   b. place different species in a planting in small odd numbered subgroups
   c. place different species to themselves in like groups
   d. place fine and coarse textured plants together

13. A taxus pruned in a spherical shape is placed at the side of the front door to attract attention to the entrance. A dozen bright red tulips are planted with a background of evergreens. Which of the following concepts is illustrated in these situations:
   a. contrast
   b. balance
   c. rhythm
   d. scale

14. It is considered good landscaping to:
   a. plant rose beds next to walks and drives
   b. plant bedding plants in the center of the front lawn
   c. plant three small shrubs at each corner of the house
   d. plant bulbs in the public area

15. Which of the following statements is true?
   a. terraces should not be constructed in the private area
   b. only informal designs should be used in the private area
   c. the private area should be developed toward some dominant feature
   d. game areas are best located in the service area

16. Screening materials should:
   a. consist only of deciduous materials
   b. completely surround the private area
   c. consist only of dense evergreens
   d. be placed to give enough privacy, but to avoid a harsh, cell-like enclosure

17. A dominant feature such as a beautiful specimen tree is placed at the distant end of the private area. Planting beds near the tree seem to lead one's attention to the tree. Which landscape principle is illustrated?
   a. contrast
   b. scale
   c. focal point
   d. unity

18. Good landscape practice dictates that lawns in the private area should be:

    a. square
    b. rectangular
    c. round
    d. no particular shape

19. If, in addition to a lawn area, a paved area is desired in the private area, it should not be out of proportion to the lawn area. Which of the following concepts is illustrated by the preceding statement?

    a. scale
    b. balance
    c. unity
    d. repetition

20. The service area:

    a. should include the family recreation facilities
    b. should have a focal point of interest
    c. should be screened from public and private view
    d. should provide a pleasant view from the terrace

21. Except for specimen plants, shrubs and trees look best when planted in groups or beds. This is because scattered placement of plant materials destroys:

    a. unity
    b. contrast
    c. scale
    d. rhythm

22. The maximum recommended height for dry walls is:

    a. four feet
    b. five feet
    c. six feet
    d. seven feet

23. Steps in the landscape should have a comfortable rise to run ratio. Which of the following is the most desirable rise to run for steps?
    a. four-inch rise to twelve-inch tread
    b. six-inch rise to fifteen-inch tread
    c. six-inch rise to ten-inch tread
    d. eight-inch rise to fifteen-inch tread
24. The hardiness zone of a plant is based upon:
    a. winter temperatures for the southern limits
    b. summer temperatures for the northern limits
    c. primarily the plants reaction to temperature
    d. an unfavorable micro-climate
25. When including a swimming pool in the plan, a designer should consider:
    a. a minimum depth of ten inches to twelve inches to allow sufficient depth for water lilies and to overcome shallow-water algae
    b. local ordinances that require fencing and other safety devices
    c. a minimum depth of fifteen feet under a diving board
    d. a paved area at least six feet wide around the pool to prevent clippings and leaves from fouling the water
26. Transport structures should be designed to:
    a. divide lawns into small sections
    b. utilize materials that are either very light or very dark in color
    c. utilize only permanent hard surface materials
    d. be used where turf and hard packed soil are not adequate
27. Structural materials have a wide variety of characteristics and uses. When using the various structural materials:
    a. walks and driveways require a good base or foundation for all materials
    b. cold weather has the least effect on brick surfaces
    c. hot weather has no noticable effect on the use of any of the materials used
    d. the more permanent materials are also the more expensive

28. Sidewalks should be:
    a. curved for added beauty
    b. four to six feet wide
    c. at least two-inches above the lawn level
    d. two to four feet wide
29. Driveways should be:
    a. located to provide for easy entrance and exit
    b. curved for added beauty
    c. at least sixteen to eighteen feet wide
    d. made of pea gravel for easy maintenance
30. Landscape materials along walks and entrances should:
    a. be coarse textured or brightly colored
    b. be types that attract little attention
    c. be fine textured or pastel colors
    d. be mainly rocks or cactus
31. The land around a home is normally divided into three areas. Which of the following does not belong?
    a. public area
    b. private area
    c. service area
    d. shopping area
32. The land near a home may have a steep slope. The best solution for landscaping would be:
    a. plant the entire slope with crownvetch
    b. terrace the slope
    c. build a rock garden
    d. build a retaining wall
33. The least desirable material for a patio would be:
    a. concrete
    b. wood
    c. asphalt
    d. rock

34. The best way to make a tall house appear lower would be:

   a. plant low shrubs close to the house
   b. surround house only with lawn
   c. plant large rounded trees near the house
   d. use small trees close to the house

35. A percentage of the total value of the house and land is often used for estimating the cost of landscaping. Although a home can often be beautifully landscaped for less, the home owner should be prepared to spend up to:

   a. one percent
   b. five percent
   c: ten percent
   d. fifteen percent

36. Which of the following is the first step in developing a landscape plan?

   a. developing an area layout plan
   b. developing a site analysis plan
   c. developing a planting area
   d. developing a structural plan

37. Determining soil type, existing vegetation, and slope are most directly a part of developing the:

   a. site analysis plan
   b. structural plan
   c. planting plan
   d. area layout plan

38. Determining the size and area needed for a terrace is most directly a part of developing the:

   a. site analysis plan
   b. structural plan
   c. planting plan
   d. area layout plan

39. Determining the location of the three major areas (the public area, the private area, and the service area) is more directly a part of developing the:

   a. site analysis plan
   b. structural plan
   c. planting plan
   d. area layout plan

40. The major objective(s) of landscape design are:
   a. beauty
   b. usefulness and beauty
   c. economic value, usefulness
   d. beauty, usefulness, economic value

41. Which of the following items should seldom be a part of the landscape in the public area?
   a. shrubs for screening
   b. shrubbery grouped into beds
   c. trees for screening
   d. ornaments such as bird baths, etc.

42. If a bed of Hick's Yews (Taxus media hicksi) was planted under a picture window, which of the following landscaping principles would be violated?
   a. texture
   b. mass
   c. scale
   d. balance

43. Which of the following plant materials might be used to develop a bed of low growing plant materials?
   a. Common Box (Buxus sempervirens)
   b. American Holly (Ilex opaca)
   c. Pfitzer Juniper (Juniperus chinensis pfitzeriana)
   d. Andorra Juniper (Juniperus horizontalis plumosa)

44. Which of the following could be included in the private area for screening and for its attractive flowering?
   a. Japanese Yew (Taxus cuspidata)
   b. Pfitzer Juniper (Juniperus chinensis pfitzeriana)
   c. Japanese Barberry (Berberis thunbergi)
   d. Showy Border Forsythia (Forsythia intermedia specatabilis)

45. Ground covers are used:
   a. in place of turf
   b. as specimen plants
   c. to control traffic
   d. where low maintenance is a requirement

46. Which of the following plant materials will provide attractive flower displays for the private areas over the longest period of time during a year?
    a. evergreen shrubs
    b. flowering shrubs
    c. flowering trees
    d. beds of annuals
47. Which of the following plants should be planted in an area which is protected from wind exposures?
    a. Hick's Yew (*Taxus media hicksi*)
    b. Linden Viburnum (*Viburnum dilatatum*)
    c. Common Lilac (*Syringa vulgaris*)
    d. Pyracantha (*Pyracantha coccinea lalandi*)
48. The characteristics of materials suitable for paving a patio are:
    a. dark color, low durability, low cost
    b. pleasing appearance, low cost
    c. durability, low cost, low heat reflection, and non-skid surface
    d. easy construction, non-skid surface
49. Which of the following is most important in selecting plant materials?
    a. mature size
    b. growth habit
    c. winter hardiness
    d. flowering habit
50. When space is very limited, which of the following is the best screening material to use:
    a. a deciduous hedge
    b. hedge of columnar evergreens
    c. a wooden fence
    d. a row of trees

NAME ______________________________ DATE ______________________

Answer sheet for examination on Landscape Design.

Directions: Underline the letter of the best answer for each question.

1. a b c [✓ d]
2. a b c [✓ d]
3. [✓ a] b c d
4. a b [✓ c] d
5. a b c [✓ d]
6. a b c [✓ d]
7. a b [✓ c] d
8. a [✓ b] c d
9. a b c [✓ d]
10. a b [✓ c] d
11. a [✓ b] c d
12. a [✓ b] c d
13. [✓ a] b c d
14. a b c [✓ d]
15. a b [✓ c] d
16. a b c [✓ d]
17. a b [✓ c] d
18. a b c [✓ d]
19. [✓ a] b c d
20. a b [✓ c] d
21. [✓ a] b c d
22. a [✓ b] c d
23. a [✓ b] c d
24. [✓ a] b c d
25. a [✓ b] c d
26. a b c [✓ d]
27. [✓ a] b c d
28. a [✓ b] c d
29. [✓ a] b c d
30. a b [✓ c] d
31. a b c [✓ d]
32. a [✓ b] c d
33. a b [✓ c] d
34. a b [✓ c] d
35. a b [✓ c] d
36. a [✓ b] c d
37. [✓ a] b c d
38. a [✓ b] c d
39. a b c [✓ d]
40. a b c [✓ d]
41. a b c [✓ d]
42. a b [✓ c] d
43. a b c [✓ d]
44. a b c [✓ d]
45. a b c [✓ d]
46. a b c [✓ d]
47. a b c [✓ d]
48. a b [✓ c] d
49. a b [✓ c] d
50. a b [✓ c] d